TOOELE ARMY DEPOT

Tooele, Utah

Monitoring Well C-44 Completion Report Phase II RFI Groundwater Investigation

Contract Number: GS-10F-0179J

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Prepared by:

PARSONS and KLEINFELDER

Salt Lake City, Utah

MONITORING WELL C-44 COMPLETION REPORT
PHASE II RFI GROUNDWATER INVESTIGATION
TOOELE ARMY DEPOT
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ABBREVIATIONS AND ACRONYMS

µg/L ..... micrograms per liter
API ..... American Petroleum Institute
ASC ..... Analytical Services Center
ASTM ..... American Society for Testing Materials
bgs ..... below ground surface
BRAC ..... Base Realignment and Closure
btoc ..... below top of casing
CTC ..... carbon tetrachloride
E and E ..... Ecology and Environmental, Inc.
ft ..... feet
gpm ..... gallon per minute
GWTP ..... Groundwater Treatment Plant
IWL ..... Industrial Wastewater Lagoon
MCL ..... maximum contaminant limit
NAD ..... North American Datum
NEB ..... Northeastern Boundary Plume
NGVD ..... National Geodetic Vertical Datum
NTU ..... nephelometric turbidity unit
NPL ..... National Priorities List
PCE ..... tetrachloroethylene
PDB ..... passive diffusion bag
PID ..... photoionization detector
ppm ..... parts per million
PVC ..... polyvinyl chloride
RCRA ..... Resource Conservation and Recovery Act
RFI ..... RCRA Facility Investigation
STL ..... Severn Trent Laboratories
SWMU ..... Solid Waste Management Unit
TCE ..... trichloroethene
TEAD ..... Tooele Army Depot
UAC ..... Utah Administrative Code
UID ..... Utah Industrial Depot
USACE ..... United States Army Corps of Engineers
USCS ..... Unified Soil Classification System
USEPA ..... United States Environmental Protection Agency
VOA ..... volatile organic analysis
VOC ..... volatile organic compound

1. INTRODUCTION

This report contains detailed information regarding the drilling, construction, development, and sampling of groundwater monitoring well C-44, located within the Base Realignment and Closure (BRAC) parcel on Tooele Army Depot, Utah (TEAD). This report was prepared for the US Army Corps of Engineers (USACE), Sacramento District, under Contract GS-10F-0179J, on behalf of TEAD by Kleinfelder, Inc., (Kleinfelder) and Parsons in Salt Lake City, Utah.

TEAD is an active military facility located approximately 35 miles southwest of Salt Lake City, Utah (Figure 1.1) and it has been in operation since 1942. TEAD has been a primary storage, maintenance, and disposal facility for conventional munitions since its inception. Due to impacts to groundwater quality resulting from this activity, TEAD was added to the National Priorities List (NPL) under the federal Superfund program in October 1990.

1.1 BACKGROUND INFORMATION

Historical wastewater discharged to the unlined Industrial Wastewater Lagoon (IWL) at TEAD resulted in a large impacted groundwater plume beneath the eastern portion of the Depot. A large number of monitoring wells, piezometers, extraction wells, and injection wells have defined a trichloroethene (TCE) plume along downgradient, northern, and western extremes of the Depot. This occurrence of impacted groundwater was designated the Main Plume.

In 1986, TCE was detected in an off-site production well located north of the Industrial Area, approximately 5,000 feet (ft) northeast of the IWL. In 1994, well C-10 was installed at the northeastern boundary of the Depot. TCE was detected at a concentration of approximately 240 micrograms per liter (µg/L) in groundwater sampled from well C-10, located directly across the road from the impacted off-site production well (Kleinfelder, 1998).

Additional groundwater investigations were conducted to further assess the nature and extent of groundwater contamination at the northeastern boundary of TEAD. These additional investigations indicated that the contamination in well C-10 and the adjacent off-site production well had likely originated from a source different from that attributed to the Main TCE plume. Thus, two plumes of groundwater contamination were indicated. This second, more easterly plume, was designated the Northeastern Boundary (NEB) Plume. The oil-water separator at Building 679 in the former industrial area (now the privately owned Utah Industrial Depot [UID]) was identified as a major source of this plume (Kleinfelder, 2002).

A subsequent investigation was designed to define the approximate off-site extent of the NEB Plume. The plume, which is relatively narrow beneath the former industrial area, extends

approximately 16,000 ft downgradient (to the north) from the identified source at Building 679 (Parsons, 2003a). The installation of groundwater monitoring well C-44 was conducted in accordance with the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Solid Waste Management Unit (SWMU) 58 Work Plan (Parsons, 2003b) and Work Plan Sampling and Analysis Plan Addendum 1 (Parsons, 2004) that were approved by the USACE and the State of Utah Department of Environmental Quality prior to initiating fieldwork.

1.2 PROJECT PURPOSE AND SCOPE

Monitoring well C-44 is one of fifteen groundwater monitoring wells installed between September 2004 and September 2005 during the Phase II RFI at SWMU 58. SWMU 58 encompasses the source area and the area impacted by the Main and NEB TCE Plumes. Objectives of the groundwater investigative component of the Phase II RFI are to:

- Refine the vertical limits and lateral extent of the Main and NEB chlorinated solvent plumes;
- Further characterize the distribution of contaminants within the plumes
- Ascertain whether there are additional contaminant sources to the NEB Plume and assess their impacts to groundwater;
- Assess the risks to human health associated with the unmanaged (off-site) portion of the NEB Plume; and
- Refine the existing numerical groundwater flow and solute transport models with respect to fate and transport, in order to better predict the potential extent (stability) of the plume in the future.

Investigative efforts described in this completion report were supervised by a Kleinfelder State of Utah-registered geologist who was present for critical on-site activities. Before drilling began, an Excavation Permit was obtained from UID, and a permit for well construction was obtained from the State of Utah Division of Water Rights. Copies of the Excavation Permit, Request and Authorization letters, and the Driller's Start Card are included in Appendix A. Underground utility clearance was obtained through Blue Stakes Location Center and UID.

Monitoring well C-44 was drilled, constructed, developed, and sampled between November 17, 2004, and January 3, 2005. Drilling and construction activities were conducted by Layne Geoconstruction (Layne) of Salt Lake City, Utah. Following completion of the well, Layne submitted a Well Driller's Report, which is included in Appendix A. Well development and groundwater sampling were completed by Veolia Water North American Operating Services, LLC (Veolia Water), which operates the groundwater treatment plant at TEAD. Laboratory analyses were provided by Analytical Services Center (ASC) of Lancaster, New York, a division of Ecology and Environmental, Inc. (E and E), and Severn Trent Laboratories (STL) of West

Sacramento, California, which are State of Utah and USACE-certified analytical laboratories. Down-hole geophysical logging was performed by RAS, Inc. (RAS) of Golden, Colorado.

Monitoring well C-44 is located in the SE ¼ of Section 24, T3S, R5W, Salt Lake Base and Meridian, just inside of Tooele Army Depot and adjacent to the BRAC parcel at the north end of the UID. The primary reasons for the installation of monitoring well C-44 at this site were to: 1) address a significant gap in the monitoring well coverage; and 2) determine from volatile organic compound (VOC) analyte concentrations if there is some diversion of groundwater along the eastern margin of the shallow bedrock block (Parsons, 2003b). Elevated concentrations of selected VOCs, if present, might be indicative of one or more previously unrecognized contaminant sources near the very north end of the BRAC parcel

2. DRILLING, SAMPLING, AND LOGGING METHODS

2.1 DRILLING

Groundwater monitoring well C-44 was drilled by Layne Geoconstruction of Salt Lake City, Utah, between November 17 and November 22, 2004 using a Becker AP-1000 percussion hammer drilling rig manufactured by Drill Systems. The AP-1000 advanced a dual-walled 10-inch diameter drill pipe into the subsurface by means of a diesel-powered pile hammer. Circulating air was pumped down the space between the inner and outer walls of the drill rod to the drill bit, where formation cuttings were picked up and carried back through the center of the drill rod and out of the borehole as the air returned to the ground surface. Cuttings were separated from the discharging air by a cyclone. Dry cuttings were collected and spread on the ground around the well site, whereas saturated cuttings were contained in 55-gallon drums pending analytical results.

2.2 SAMPLING OF DRILL CUTTINGS

Cuttings were observed continuously as they discharged from the cyclone and were collected in 1-quart bags and chip trays. The cuttings were collected and logged at 5-foot intervals or when significant changes in lithology occurred. Drive sampling in previous boreholes during this program was rarely successful due to refusal in coarse sediments and inability to predict where thin fine-grained layers would occur. Thus, a more accurate and complete borehole log resulted from continuous observation of cuttings from the cyclone.

Drill cuttings were logged using the American Society for Testing Materials (ASTM) Method D2488-00. The Unified Soil Classification System (USCS) was used for designating the various types of unconsolidated material encountered. Where a conflict between the two methods was identified, the ASTM convention took precedence. Color of the drill cuttings (when wetted) was noted by referencing the Munsell color chart system. Estimated percentages of gravel, sands, and fines; degree of roundness and lithology/mineralogy of any gravel clasts; moisture content; degree of cementation; and any other notable attributes were routinely recorded in the sample description. The Becker Hammer Drilling method allows for a maximum clast size of about 6 inches to pass through the drill pipe to the surface. While boulders and cobbles exceeding this dimension may have been encountered over certain intervals, it was generally not possible to identify such zones, let alone estimate the relative percentages of clasts exceeding that size.

Grab samples of drill cuttings from below the saturated zone were logged and screened for VOCs using an Environmental Instruments photoionization detector (PID). PID readings were also included on the boring log. PID readings from the grab samples from this boring ranged from 0.0 to 1.0 parts per million (ppm). A composite of these samples was submitted for VOC

analysis, which was used to determine the proper means of disposal for all saturated cuttings from this borehole. Saturated drill cuttings were containerized in 55-gallon drums and transported to the UID 90-day yard to await analysis.

2.3 RECORD KEEPING

While on site, Kleinfelder's geologist maintained records of all activities in a bound field log book, on Daily Field Report forms, Drill Rig Inspection forms, Safety Meeting Forms, and Equipment Calibration Logs. Copies of these records are presented in Appendix B.

3. SUMMARY OF SUBSURFACE CONDITIONS

3.1 GEOLOGIC LOG

A Kleinfelder geologist was on-site during drilling and sediment sampling in order to maintain a continuous geologic log of the subsurface conditions that were encountered. Lithologic descriptions and the geologist's observations were entered onto the geologic log. The geologic log of the cuttings that were sampled during drilling of monitoring well C-44 borehole is included in Appendix C as Plate C-1.

The geologic log indicates that the boring was drilled in unconsolidated valley fill sediments from the ground surface to a total depth of 300 ft below ground surface (bgs). The coarser-grained sediments (i.e., gravels) are interpreted to have been deposited in a dynamic high energy depositional environment of coalescing alluvial fans. They are interpreted to represent one or more of several types of alluvial fan deposits, including debris flow, stream channel, sheetflood, and sieve, that have been defined (Collinson, 1978) based on depositional process, location on the fan, deposit morphology, degree of sorting and bedding, etc. Most of the subsurface sediments were poorly graded sand and gravel with varying amounts of boulders, cobbles, silt, and clay. The majority of the coarse-grained sediments consisted of sub-rounded to sub-angular clasts of quartzite and limestone that appeared water-worn. While some angular clasts are observed, these are likely products of the mechanical breaking caused by the drilling method.

Horizons of less permeable finer-grained clay-rich sediments were encountered at depths of 0-10, 193-196, 214-216, 246-248, 263-276, and 286-291 ft bgs as indicated on the geologic log. While some of the finer-grained clay- and/or silt-rich sediment occurrences may be of lacustrine or floodplain origin, others may represent debris flows (Collinson, 1978) and/or possibly stream overbank deposits.

The geologic log also indicates that some weak to moderately cemented and strongly cemented zones were also encountered at depths of 234-237, 242-244, and 282-285 ft bgs. No bedrock was encountered during drilling of monitoring well C-44.

Free water from the cyclone was first observed at approximately 270 ft bgs during drilling. The depth to water was measured at 258.40 ft below top of casing (btoc) (255.41 ft bgs) by Veolia Water after the well was constructed and developed. Perched water was not encountered during drilling of monitoring well C-44.

3.2 GEOPHYSICAL LOGS

As a secondary interpretive tool, down-hole geophysical logging of monitoring well C-44F was completed within the polyvinyl chloride (PVC) cased well following construction. Natural gamma ray (gamma) and induction electric (induction) logs were run simultaneously by RAS on December 8, 2004 using a combination gamma ray-induction tool manufactured by Century Geophysical Corporation of Tulsa, Oklahoma. The gamma and induction logs for this well are contained in Appendix C. Data validation was attained via a repeat logging run of a selected stratigraphic interval within the well. The borehole geology has been added on a separate log printout in Appendix C, and an attempt has been made to correlate pronounced gamma and induction electric highs and lows with fine-grained, generally clay-rich units and caliche-cemented zones. The reader should refer to that multipage printout when reviewing the comments presented below concerning the description and interpretation of the geophysical logs.

The gamma logging technique measures the natural gamma emissions emanating from the formation surrounding the borehole. This radiation is released from nuclei of an unstable element decaying to a more stable element. Potassium-40 is the element responsible for most of the gamma radiation detected by the gamma ray probe. This element is very abundant in a number of rock-forming minerals, such as potassium feldspar, that weather to clays. Hence, as the clay content of the sediment increases the gamma ray response also increases. Thorium- and uranium-bearing minerals also produce a gamma ray response, but in most geologic environments, including the unconsolidated valley fill deposits at the project site, the potassium-40 isotope is most abundant. Conversely, the gamma response becomes progressively weaker as the quartz content of the sediment increases. A comparison of this and other monitor well boring logs with their respective gamma ray logs shows a very strong correlation between finer-grained, clay-rich units and gamma ray peaks. Slight offsets between a gamma peak and the location of the fine-grained interval are attributed to an inability to exactly define the depths of unit contacts owing to the time required for the cuttings to travel up the borehole and reach the surface. The measurement scale of the gamma-ray log is in API (American Petroleum Institute) units, accepted as the international reference standard that allows consistent comparisons to be made between a wide variety of gamma-ray counting devices.

The gamma ray response for coarse-grained units is fairly consistent with almost all readings falling below 60 API units. This signature is compatible with the general absence of fine-grained clay-rich intervals as verified by the geologic log. Three gamma ray peaks from 60 to 75 API units were generated at depths of about 33-35, 212, and 265-277 ft correlate with clay-rich units noted in the borehole log. Weaker gamma peaks at about 212 and 285-288 ft appear to correlate with other fine-grained clay-rich zones identified in the drill cuttings. A few fine-grained units (at 0-9, 192-196, and 246-248 ft) identified in the geologic log are not associated with a markedly elevated gamma response. The absence of a stronger response for those zones

may reflect one or more factors including clay mineralogy (e.g., a lack of potassium-bearing clay minerals such as illite).

The induction log measures the conductivity from high frequency alternating currents that are induced into the geologic formation, and is best suited where the formation is characterized by low to medium (less than 50 ohm-meters) resistivity values, the geologic medium exhibits medium to high porosity, and the open borehole was advanced using mud or air as the drilling fluid. Induction logging can be performed in boreholes cased with PVC, but not with steel pipe. Although the induction device measures conductivity, by convention, the conductivity readings are converted to a resistivity curve when plotted on a down-hole log via a simple inverse relationship.

Three curves are shown on the induction logs that were run by RAS. They represent the direct conductivity (millimhos/meter) readings as designated by a dashed ("cond") curve on the plot, a conductivity ("ap-cond") curve designated by a dotted line that has been corrected for the temperature of the induction probe, and resistivity (ohm-meters) measurements derived from a conversion of the temperature-corrected conductivity readings that are depicted as a solid ("res") line on the induction log plot. Note that although the conductivity and resistivity curves appear to mimic one another, the scales for the two properties are reversed since their relationship is an inverse one.

The resistivity curve displays considerable fluctuations within the coarse-grained gravel-bearing units, with conductivity readings generally exhibiting an inverse relationship. Resistivity values typically range between about 40 and 175 ohm-meters, and are interpreted to reflect differences in porosity, clay content, and the grain size distribution of the sediments. At several depths between 15 and 25 ft bgs. the resistivity (and conductivity) response went off scale (>250 ohm-meters). The induction response at over this interval is discussed below. Note that the resistivity highs are almost entirely confined to the coarser-grained sediment intervals. Only one of the two caliche-cemented zones identified during geologic logging of this boring showed an elevated resistivity response (at about 235 ft). Another significant resistivity peak of about 125 ohm-meters at 220 ft reflects a boulder zone logged at that approximate depth. Several distinct resistivity highs between about 40 and 70 ft may indicate significantly coarser-grained gravels marked by a greater abundance of cobbles and possibly small boulders. There is no verification of this, however, in the geologic boring log. Resistivity lows (10-20 ohm-meters) are generally indicative of fine-grained clay-rich zones, including a broad low that was documented between about 255 and 275 ft bgs. But as per the other monitoring wells that have been logged using an induction probe, anomalous resistivity responses by themselves are not necessary diagnostic of fine-grained clay-rich sediments.

In contrast to resistivity, the conductivity response is generally more consistent at around 15 millimhos/meter. However, the strongest conductivity peaks, recorded at approximately 20,

190, and 265-270 ft bgs, went off scale (i.e., exceeded 120 millimhos/meter). Extreme fluctuations in the induction electric response of the sediments around 20 ft bgs are interpreted as probable metallic debris (e.g., screw, nail, etc.) that was lost down the borehole during well construction (Pedler, 2005). The same response was observed in the repeat section, indicating that the very high conductivity readings are not an artifact of the downhole induction tool. The conductivity highs at 265-270 ft are responses to clay-rich units, but the high near 190 ft remains unexplained. Distinct conductivity peaks at about 32, 210, 245, and 285 ft bgs appear correlative with clay-rich units identified from the drill cuttings. All are associated with pronounced resistivity lows.

In summary, the induction electric and gamma logs are generally consistent with the subsurface conditions as interpreted from the drilling response and geologic logging of the drill cuttings. For those geophysical responses that cannot be related to the borehole geology, it is likely that the unit or feature that produced a response was too thin, or the attribute(s) to subtle, to be identified and documented in the geologic log. Furthermore, determining the abundance and maximum size of cobbles and larger clasts using percussion hammer drilling can be difficult. Less frequently a distinct geologic feature, such as caliche cementation or a clay-rich interval, has no apparent anomalous geophysical signature. For those cases, the signature of the adjacent units may mask the response of the interval in question.

3.3 HYDROSTRATIGRAPHIC SECTION

To aid in understanding the subsurface geology and water table configuration in the vicinity of this monitoring well boring, the geologic log for this well was included on a straight line cross section trending northwest-southeast over a distance of approximately 6,000 ft that is also defined by monitoring wells C-41, C-42F, C-43F, and C-45 (Plate C-4). All of the wells except C-41 were projected onto this section. Projection distances are provided on the cross section. The location of this cross section (A – A') is shown on Plate C-3. Note that only cross section A – A' is provided in this well completion report, since it is the only section that illustrates a simplified stratigraphic strip log of C-44.

Study of the cross section suggests that the predominantly fine-grained sediment units do not appear to be laterally continuous between the five C-series wells that lie on or have been projected onto Cross Section A – A'. Thus, the correlation of these units from borehole to borehole is deemed to be poor. This is partially due to the substantial distances between them (up to ½ mile). However, even for boreholes that are relatively close to each other (e.g., C-41 and C-42F are approximately 800 ft apart), little correlation appears to exist between units.

The difficulty in correlating distinct fine-grained units is not surprising, given that the unconsolidated valley fill within SWMU-58 was largely deposited in a dynamic high energy

depositional environment of coalescing alluvial fans. Fine-grained units deposited under such conditions are characterized by limited thickness and areal extent, and this also appears to hold true for the project area, in addition to well boring C-44. Many of the fine-grained silt- and/or clay-rich intervals pinch out over a few hundred feet due to a change in the depositional environment.

Another plausible explanation for limited areal extent is post-depositional erosion and sediment reworking. Channel erosion is strongly suspected of causing the substantial difference in the thickness of a clay-rich lacustrine or floodplain deposit encountered in two closely spaced borings at Building 600 in UID. It almost certainly has been operative elsewhere.

There is another factor that may frustrate correlation of fine-grained units in this and other Phase II RFI groundwater monitoring wells. Most of these fine-grained units, even if they exhibit some lateral extent, were generally deposited on inclined alluvial fan surfaces sloping several degrees or more. Over a distance of just a few hundred feet a dip of even a few degrees translates into a change in elevation of up to 10 ft or more. Moreover, for monitoring wells spaced a thousand feet or greater, which is not atypical for the groundwater monitoring array at TEAD, differences in the elevation of a laterally continuous unit could be on the order of several tens of feet.

As per the fine-grained units, little success has been achieved attempting to correlate caliche-cemented zones that occur primarily in the gravels. In well C-44 caliche-cemented zones are sparse, with all occurrences below 230 ft bgs. The same general comments presented above for fine-grained sediment deposits also apply to correlation of cemented zones. The ability to correlate both fine-grained sediment units and cemented zones between monitoring wells in the project area may be contingent upon the quality of the downhole gamma and induction electric logs for those wells.

4. WELL CONSTRUCTION SUMMARY

4.1 CONSTRUCTION TECHNIQUES AND MATERIALS

During drilling of monitoring well C-44, the 10-inch Becker Hammer drive casing was advanced to a depth of approximately 300 ft bgs. Well construction occurred on November 22 through November 24, 2004. Monitoring well C-44 was constructed inside the drive casing. Two 10-foot sections of threaded, 4-inch diameter Schedule 40 PVC well screen with 0.010-inch wide slots and 28 10-foot sections of 4-inch diameter Schedule 40 PVC blank casing were assembled and lowered inside the drive casing to the bottom of the borehole. The screen extends from 280 ft to 300 ft bgs. The well riser consists of 3 ft of aboveground blank well casing.

Silica sand (16-40) was added to the annulus between the PVC and the borehole in the interval adjacent to the well screen. To help minimize the risk of bridging and to confirm that the correct volume of sand was added, the sand was poured slowly into the annulus from the surface and continuously monitored until the top of the sand interval was approximately 3 ft above the top of the screen. The sand-pack interval was isolated from upper portions of the borehole with a 5-foot thick seal of bentonite clay pellets. The remaining annulus above the bentonite clay pellets was grouted to approximately 30 inches bgs with 30 percent solids bentonite slurry in accordance with Utah Administrative Code (UAC) R655-4-9.4.2. Following completion the bottom of the well was tagged at a depth of 300 ft bgs. A well construction diagram is provided in Appendix D.

4.2 SURFACE COMPLETION AND SURVEY COORDINATES

The aboveground surface completion was constructed on December 13, 2004. A locking 6-foot long, 10-inch diameter steel protective casing was placed around the uppermost part of the monitoring well casing, with approximately 3 ft above and 3 ft below ground. Concrete was used to partially fill and anchor the protective casing, fill the upper 5 ft of the borehole annulus, and build a 3-foot square by 1-foot thick pad (6 inches above ground surface) around the finished well. The concrete pad was finished to slope away from the protective casing and was embedded with a brass survey monument.

Four 4-inch diameter steel bollards were positioned around the pad to protect it from vehicular traffic. The bollards stand approximately 4 ft above the ground surface and extend about 2 ft bgs into concrete-filled post holes.

Ward Engineering Group of Salt Lake City, Utah, surveyed the well on May 2, 2005. Coordinates for the well locations are referenced to the North American Datum (NAD) 1983

Utah State Plane Central Zone and the elevation to the National Geodetic Vertical Datum (NGVD) 1929. Survey data are included in Appendix D.

5. WELL DEVELOPMENT

Groundwater monitoring well C-44 was developed using swabbing, bailing, and pumping methods on December 2 and 3, 2004. Development continued for 5 hours and 27 minutes until the turbidity of the water produced was less than five nephelometric turbidity units (NTUs). All development water was collected and contained for later disposal pending analytical results (see Section 7.3). Well development records are included in Appendix E.

5.1 SWABBING AND BAILING

Swabbing and bailing took place for approximately 2 hours and 33 minutes. Swabbing was done with a loose fitting surge block with an oversized rubber disk, slightly smaller than the inner diameter of the screen. Periodic measurements of pH, temperature, electrical conductivity, turbidity, and comments regarding the appearance of discharge water were recorded on well development records (Appendix E). Approximately 105 gallons of water were removed from well C-44 by bailing during development.

5.2 PUMPING

After swabbing and bailing the well, development was completed using an electric submersible pump. The pump was lowered to the bottom of the screened interval and operated intermittently at rates ranging from 7.01 to 7.14 gallons per minute (gpm) for approximately 2 hours and 54 minutes. During development pumping, the pump was periodically shut off, and the water in the discharge piping was allowed to back-flush (surge) into the well. Pumping and periodic back-flush surging was continued until there was no noticeable increase in the discharge water turbidity. Periodic measurements of pH, temperature, electrical conductivity, turbidity, and comments regarding the appearance of discharge water were recorded on well development records. A total of 1,008 gallons of groundwater were removed by development pumping. The final turbidity was measured at 1.47 NTU.

A total drawdown of approximately 0.20 ft was measured at drawdown equilibrium using a pumping rate of 7.5-8.0 gpm during the final stage of well development (Appendix E). The limited drawdown and the very short pumping time (~2 minutes) required to reach an equilibrium state indicate the formation at the pump depth (~297 ft bgs), a poorly graded gravel with sand, has an elevated hydraulic conductivity as would be expected for a unit of this type.

6. GROUNDWATER SAMPLING

6.1 SAMPLING METHODOLOGY

Monitoring well C-44 was sampled using passive diffusion bag (PDB) sampling techniques. PDB sampling is performed without purging and involves lowering a polypropylene bag filled with distilled water to a predetermined depth. Once in place, the water within the PDB sampler is allowed to equilibrate with the surrounding groundwater for 2 weeks. During this time, VOCs diffuse into the distilled water. The PDB sampler is then removed from the well and water is transferred into three pre-preserved 40 mL volatile organic analysis (VOA) vials.

Three PDB samplers were placed in monitoring well C-44 on December 20, 2004. One sampler was placed at a depth of 280 ft bgs, a second sampler at a depth of 290 ft bgs, and the third sampler at a depth of 300 ft btoc. The PDB samplers were retrieved from well C-44 and sampled on January 3, 2005. Groundwater samples collected from well C-44 were assigned sample numbers C-44GW001, C-44GW002, and C-44GW003.

After the sample containers were filled, they were placed into an ice-chilled cooler and shipped overnight to ASC, a State of Utah and USACE-certified analytical laboratory, for VOC analysis. Chain-of-custody forms were filled out and used to document the sampling dates, analytical parameters requested, and proper sample handling. Completed chain-of-custody forms and cooler receipt forms are included in Appendix F.

6.2 GROUNDWATER ANALYTICAL RESULTS

Analysis for VOCs was completed using US Environmental Protection Agency (USEPA) Method 8260B. The highest VOC concentrations (28.6 -31.0 µg/L) in this well were reported for carbon tetrachloride (CTC), which was detected at all the three depths. TCE (8.22-8.95 µg/L) and chloroform (0.38-0.40 µg/L) were also detected at the three depths. The highest concentrations of all three detected analytes were reported for the uppermost PDB sampler at 280 ft bgs. No other VOCs were reported.

The elevated concentrations of CTC in shallow groundwater at this location as determined from the PDB sampling is conjectured to reflect one or more sources of CTC within the industrial area at or in the vicinity of OS-623 and/or OS-633. Continuous monitoring of upgradient wells B-54, C-30, and C-34 over the past 5+ years has confirmed the consistent presence of CTC in all three wells (~12-25 µg/L for B-54; ~10-30 µg/L for C-30; and ~5-36 µg/L for C-34) in concentrations comparable to those reported for the initial sampling event of well C-44. Note also that the post-Fall 2004 sampling of C-44 has confirmed CTC concentrations in shallow groundwater at about 30 µg/L. Very small amounts of chloroform in C-44 are to be expected, but it is not clear if the

compound represents a co-contaminant or a breakdown product of the CTC. The very low concentrations reported for TCE, particularly with respect to CTC, provided further evidence that the NEB TCE Plume is located considerably farther to the east of this well site.

The sampling results from monitoring well C-44 are summarized in Table 1. Laboratory reports summarizing the results of groundwater analysis from C-44 are included in Appendix F. Also included is an analytical quality control summary describing data quality issues.

TABLE 1

SUMMARY OF LABORATORY RESULTS

TOOELE ARMY DEPOT, UTAH

Analyte	Federal MCL (µg/L) 95 40CFR 141.11, 141.12, 141.61, & 141.62	Analytical Results (µg/L)		
Sample Number & Depth		C-44GW001 (283 ft)	C-44GW002 (293 ft)	C-44GW003 (303 ft)
1,1,1 Trichloroethane	200	ND	ND	ND
1,1,2 Thrichloroethane	5	ND	ND	ND
1,1 Dichloroethane	5	ND	ND	ND
1,1 Dichloroethene		ND	ND	ND
1,2 Dichloroethane	5	ND	ND	ND
1,2 Dichloropropane	5	ND	ND	ND
Benzene	5	ND	ND	ND
Carbon tetrachloride	5	31.0	29.5	28.6
Chloroethane		ND	ND	ND
Chloroform	100	0.402	0.377	0.387
cis 1,2 Dichloroethene		ND	ND	ND
Ethylbenzene	700	ND	ND	ND
m,p Xylene	10,000	ND	ND	ND
Methylene chloride	3	ND	ND	ND
Naphthalene		ND	ND	ND
0 Xylene	10,000	ND	ND	ND
Tetrachloroethene		ND	ND	ND
Toluene	1,000	ND	ND	ND
trans 1,2 Dichloroethene		ND	ND	ND
Trichloroethene	5	8.95	8.22	8.26
Vinyl chloride	2	ND	ND	ND

7. INSTALLATION RESTORATION WASTE

7.1 DECONTAMINATION METHODS

To help minimize the chance that non-dedicated equipment could cross-contaminate groundwater or drill cuttings at well C-44, a rigorous decontamination program was followed. A decontamination station was constructed in the temporary UID RCRA 90-day yard (located south of building 614) that could accommodate the drill rig, drill pipe, and other equipment as needed. Decontamination of equipment was conducted with approved water from TEAD production well WW-3 using a steam cleaner/high-pressure washer. Equipment wash and rinse water were contained in a sump within the decontamination station, and then pumped to a Baker Tank in the UID 90-day yard where it was managed as suspect hazardous waste.

7.2 DISPOSAL OF DRILL CUTTINGS

Drill cuttings from the unsaturated zone were collected below the cyclone in a wheelbarrow and spread evenly on the ground around the well site. Once groundwater was encountered, saturated cuttings were containerized in 55-gallon drums and transported to the UID 90-day yard. An inventory of the suspect hazardous waste drums containing the saturated drill cuttings from this well is presented in Appendix G. An IRW characterization sample of the saturated drill cuttings was collected every 5 ft during drilling. Upon completion of the borehole, these samples were composited to a single sample and submitted to the laboratory for analysis of VOCs. Lab results indicated VOCs were not detected in the drill cuttings from C-44. A copy of these results is included in Appendix G.

Disposition recommendations for the saturated drill cuttings were prepared by Parsons in a memorandum to the TEAD Environmental Management Office. TEAD concurred with the recommendations, and directed that the cuttings be returned to the well site and spread on the ground surface (Appendix G). Compliance with this request occurred April 25, 2005.

7.3 DISPOSAL OF WASTEWATER

Water derived during the drilling of well C-44 was containerized in 55-gallon drums and transported to the UID temporary 90-day yard by the Layne-Christensen drilling crew in one of their support vehicles. The water in those drums, as well as the rinsate water generated from the decontamination of the drill rig following installation of well C-44, was pumped into a 6,500-gallon capacity Baker Tank (Parsons container #PARS*NZ0430901*). This tank was closed before the development of C-44; hence no development water was added. The liquid waste stream derived from C-44 was commingled with the wastewater derived from the drilling, installation,

development, and decontamination activities for wells C-41 and C-42F. Additionally, a few hundred gallons of rinsate from decontamination of the sonic drill rig following the advancement of vertical profile boring I610-VPB001 were also stored in this container. See the drum tracker inventory record for this container in Appendix H.

Commingling of the waste streams from these wells was justified because these three C-series wells lie within the NEB Plume. Consequently, for IRW management purposes it was assumed the development water from these wells would be impacted by chlorinated solvents and have similar waste characteristics.

After Baker Tank *#PARSNZ0430901* had been closed, it was sampled on December 1, 2004 to determine the most suitable disposal option for this waste stream. The sample was labeled IDW21 and was analyzed for VOCs. The Chains-of-Custody and laboratory report for this sample are presented in Appendix H. Sample IDW21 contained 155 µg/L TCE, 1.09 µg/L tetrachloroethylene (PCE), 0.167 µg/L chloroform, and 0.761 µg/L CTC. The waste was coded as F001 and F002 hazardous. Based on this analysis, the water met the requirements for processing at the TEAD Groundwater Treatment Plant (GWTP), and this disposal option was recommended to TEAD. A copy of the disposal memo is included in Appendix H. Following authorization by TEAD, the waste was transferred to the TEAD GWTP on January 5, 2005, via a 6,000-gallon capacity tanker provided by MP Environmental.

Water derived from the development of C-44 was transported from the well site to the UID temporary 90-day yard by Veolia Water using a 1,000-gallon capacity polytank mounted on a dual axle trailer. The development water was then pumped into a 6,500-gallon capacity Baker Tank (Parsons container #PARS*NZ0433701*) at the UID 90-day yard.

The waste stream derived from the drilling, installation, and development of C-43F was later added to the C-44 development water in Parsons container #PARS*NZ0433701*. Rinsate water from drill rig decontamination following completion of vertical profile soil borings I610-VPB002, I610-VPB003, I610-VPB005, I610-VPB009, I620-VPB002, and I630-VPB001 was also added to this Baker Tank. As noted above, commingling of the waste streams from the two groundwater monitoring wells was justified because both wells were installed in the NEB TCE Plume. Thus, the VOC contaminant signatures were considered identical. Addition of the rinsate water generated from rig decontamination following drilling of the six vertical profile borings occurred after a review of the investigative soil gas data for each boring confirmed that no exotic VOCs were present that might prevent treatment of the rinsate (and the waste stream in Parsons container #PARSNZ0433701) at the TEAD GWTP.

The second Baker Tank (*#PARSNZ0433701)* was closed and sampled on February 3, 2005. The sample was labeled IDW29 and was analyzed for VOCs. Sample IDW29 contained 4.0 µg/L TCE, 0.46 µg/L chloroform, 1.1 µg/L ethylbenzene, 1.6 µg/L naphthalene, 1.0 µg/L m/p-

xylenes, and 1.0 µg/L o-xylenes. The waste stream was designated F001 and F002 hazardous in the presence of TCE. The detection of naphthalene eliminated the TEAD GWTP as the preferred option for treatment/disposal, because that facility is not permitted to treat waste containing detectable amounts of that constituent. The source of the naphthalene was not identified.

The presence of naphthalene necessitated arrangements to dispose of the waste stream at another facility. The wastewater was transported to Clean Harbors' Grassy Mountain disposal facility for solidification and landfilling on March 23, 2005. Copies of the disposal recommendations memo and TEAD's authorization to dispose off-site can be found in Appendix H.

8. REFERENCES

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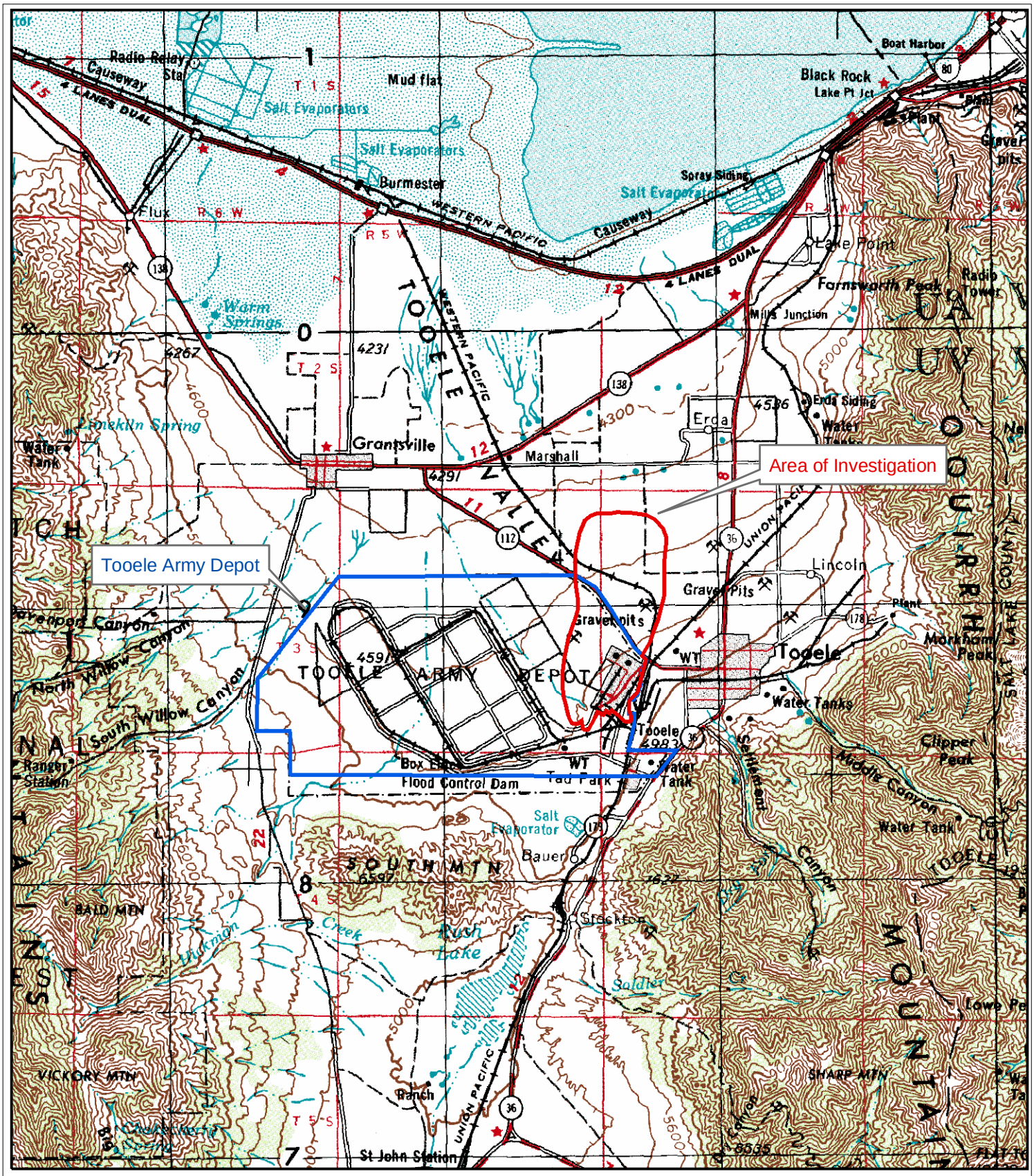
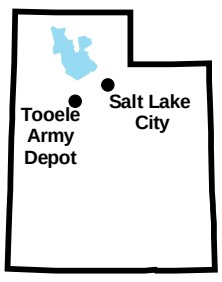


LEGEND

- Installation Boundary
- Investigation Boundary

Source: USGS Tooele, Utah 1 x 2 Quadrangle, 1970



SWMU 58
PHASE II RFI
TOOELE ARMY DEPOT
TOOELE, UTAH

0 1 2 3 Miles

N

FIGURE 1.1
SITE LOCATION MAP

w:\tooele\maps\well_comp_report_sept2005\Loc_Map.mxd 11/28/05

PARSONS

APPENDIX A

APPENDIX A
EXCAVATION PERMIT
(Proponent Agency is Installation Support Division)
(TEAD-R 420-16)

EXCAVATION REQUESTED BY Parsons Co. PHONE (801) 572-5999

LOCATION OF EXCAVATION Northeast of Utah Industrial Depot

PURPOSE OF EXCAVATION Environmental Investigation

NAME OF DIRECTOR TO NOTIFY THAT EXCAVATION IS TAKING PLACE IN OR NEAR A BUILDING OR FACILITY UNDER THEIR RESPONSIBILITY _____
DATE DIRECTOR WAS NOTIFIED _____

NOTIFICATION SHALL BE MADE 24 HOURS IN ADVANCE

BASED UPON DRAWINGS AVAILABLE AND PERSONAL KNOWLEDGE OF THE AREA FOR WHICH I AM RESPONSIBLE, THE SITE IS FREE OF UNDERGROUND FACILITIES OR SYSTEMS EXCEPT AS NOTED:

REALITY SPECIALIST-BLDG 501 Dean Chamberlain 8/5/04

FACILITIES SUPPORT DIVISION-Bldg 516 _____

COMMUNICATIONS CONTRACTOR-Bldg 10 _____ 8-5-04

COAXIAL CABLE MANAGER-Bldg 10 _____

ENVIRONMENTAL OFFICE-Bldg 8 _____ 8-11-04

SAFETY OFFICE-Bldg 400 N/A

BLUE STAKES Notification Required YES ___ NO V
Confirmation Number _____
(For excavations near natural gas lines call BLUE STAKES 2 days prior to the excavation (801) 983-1555. This permit is not valid if yes is checked and the confirmation number is missing.)

INSTALLATION SUPPORT DIV-Bldg 501 _____

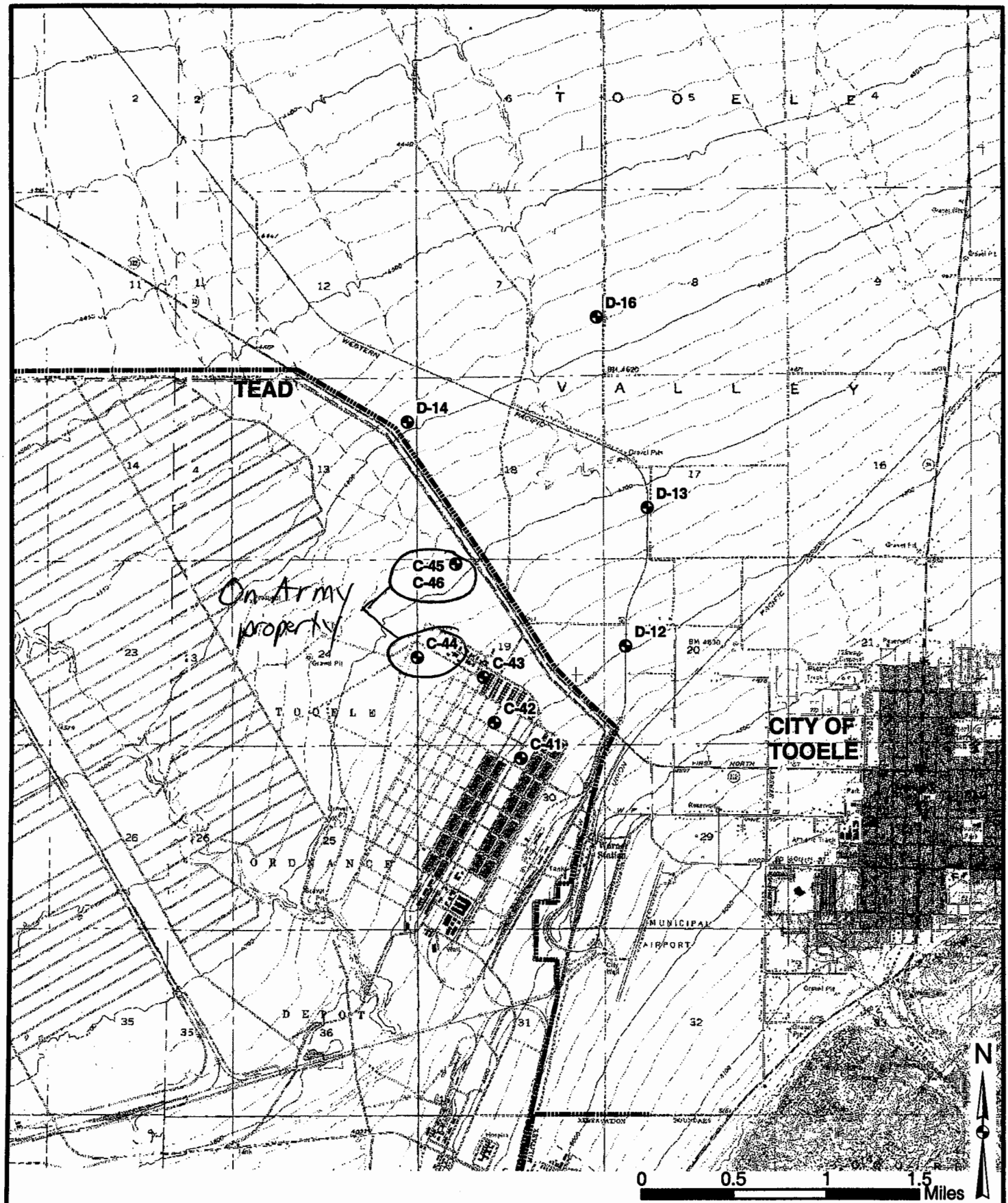
NOTE:THIS PERMIT IS TO BE COMPLETED AND ATTACHED TO THE WORK ORDER PRIOR TO THE WORK ORDER BEING ISSUED.

AFTER HOUR EMERGENCIES? CALL 833-2304 or 833-2015

EXCAVATOR MUST HAVE A VALID PERMIT IN POSSESSION BEFORE/DURING EXCAVATION

SMATE Form 2782-R (Rev) Feb 02
(Previous edition obsolete)

Call GSTek (3201/3994) 24 hrs. Before dig start



LEGEND

● PROPOSED GROUNDWATER MONITORING WELL

FIGURE 4.5

PROPOSED GROUNDWATER MONITORING WELLS

TOOELE ARMY DEPOT

w:/tooele/maps/743524/draftmap_for_jeffbigelow.mxd 07/14/03

PARSONS

DIVISION OF WATER RIGHTS
REQUEST FOR NON-PRODUCTION WELL CONSTRUCTION
(for wells deeper than 30 feet)

Well Type (check one): Provisional ( ) Monitor (X) Cathodic Protection ( ) Heat Exchange ( )

Applicants Name: TOOELE ARMY DEPOT

Mailing Address: SIOTE-EO-EO (BLDG 8)

TOOELE ARMY DEPOT TOOELE, UTAH 84074

Contact Person: MR. LARRY McFARLAND Phone: (435) 833-3504

Proposed Start Date: 08/02/04 Anticipated Completion Date: 12/31/04

Well Drillers License No: 215 Proposed No. of Wells: 10

PROPOSED LOCATION OF WELLS:

County: TOOELE

NO./SQ. DISTANCE (feet)	EAST/WEST DISTANCE (feet)	SECTION CORNER	SECTION	TOWNSHIP	RANGE	BASE	DIAMETER (inches)	DEPTH (feet)
N1000	W1300	W4	15	2S	1W	SL	2	100

Use back of form or additional paper if more room is needed

EXPLANATORY: REFER TO ACCOMPANYING TABLE FOR INFORMATION ON PROPOSED WELLS.

Signature of Applicant

7-14-04
Date

FOR OFFICE USE ONLY

Date of Request: _____ *Approval Date:* _____

Approved by: _____ *Provisional/Monitor Well No.* _____

Water Right Number (if available): _____

LOCATION DATA FOR PROPOSED GROUNDWATER MONITORING WELLS
UTAH INDUSTRIAL DEPOT, TOOELE, UTAH

	-proposed well location-		-referenced section corner-		-well location relative to section corner-								
Well Identifier	State Plane (northing)	State Plane (easting)	State Plane (northing)	State Plane (easting)	North/South Distance (feet)	East/West Distance (feet)	Section Corner	Section	Township	Range	Base	Diameter (inches)	Depth (feet)
C-41	7364702	1407022	7365112	1409429	South 413	West 2406	NE	30	3S	4W	SL	4	390
C-42	7365715	1406276	7365067	1404092	North 649	East 2187	SW	19	3S	4W	SL	4	355
C-43	7367012	1405964	7365067	1404092	North 1946	East 1863	SW	19	3S	4W	SL	4	320
C-44	7367575	1404058	7365067	1404092	North 2507	West 34	SE	24	3S	5W	SL	4	290
C-45	7370246	1405151	7370371	1404071	South 125	East 1076	NW	19	3S	4W	SL	4	310
C-46	7370246	1405151	7370371	1404071	South 125	East 1076	NW	19	3S	4W	SL	4	550
D-12	7367916	1410001	7370415	1409392	South 1731	East 433	NE	19	3S	4W	SL	4	400
D-13	7371871	1410626	7370415	1409392	North 1456	East 1355	SW	17	3S	4W	SL	4	355
D-14	7374293	1403758	7375579	1404047	South 817	West 256	NE	13	3S	5W	SL	4	240
D-16	7377309	1409136	7375667	1409370	North 1644	West 234	SE	7	3S	4W	SL	4	250

OLENE S. WALKER
Governor
GAYLE F. MCKEACHNIE
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES
Division of Water Rights

ROBERT L. MORGAN
Executive Director

JERRY D. OLDS
State Engineer/Division Director

TOOELE ARMY DEPOT
SIOTE-EO-EO (BLDG 8)
TOOELE ARMY DEPOT
TOOELE, UT 84074

July 28, 2004

Dear Applicant:

RE: MONITOR WELL#: 0415004M00

Reference is made to your request to drill 10 MONITOR WELL(S). The anticipated drilling depths will exceed the minumum regulated and reporting depth of 30 feet, thereby requiring permission from the Division of Water Rights to proceed with this project.

The specifications outlined in your well project request dated July 28, 2004. meet the State Engineer's requirements and permission is **HEREBY GRANTED.** Therefore, this letter is your authorization to proceed with the construction of the well(s) in accordance with those specifications and with respect to the following provisions:

1) Small diameter casing is to be used in the construction of the well(s) and no more water is to be diverted than is necessary to determine the quality of the ground water by obtaining representative samples as required by the project.

2) The well(s) must be drilled by a currently licensed Utah driller and must be drilled in a manner consistent with the recommended construction standards cited in the Utah State Administrative Rules for Well Drillers.

3) The enclosed Driller (START) Card form must be given to the licensed driller for his submittal prior to commencing well construction. The other enclosed form is the 'Applicant Card.' It is **YOUR RESPONSIBILITY** to sign and return this Applicant Card form to our office upon well completion.

4) If complete information is not available in the initial application, it is the **APPLICANT'S RESPONSIBILITY** to provide, upon completion, descriptive locations of the wells referenced by course and distance from established section corners, *e.g. North 565 feet and West 1096 feet from the SE corner of Section 35, T2S, R5W, SLB&M.*

5) At such time as the well(s) are no longer utilized to monitor ground water and the intent of the project is terminated, the well(s) must be temporarily or permanently abandoned in a manner consistent with the Administrative Rules.

NOTE: Please be aware that your permission to proceed with the drilling under this authorization expires January 28, 2005.

Sincerely,

Lorenzo F. Quintana, for

John Mann, P.E.
Regional Engineer

1594 West North Temple, Suite 220, PO Box 146300, Salt Lake City, UT 84114-6300
telephone (801) 538-7240 • facsimile (801) 538-7467 • www.waterrights.utah.gov

APPLICANT CARD for Monitor WELL#: 0415004M00

IMPORTANT: THIS CARD MUST BE COMPLETED, SIGNED AND RETURNED BY THE WELL OWNER/APPLICANT AS SOON AS THE WELL IS DRILLED BY A LICENSED UTAH WATER WELL DRILLER.

OWNER/APPLICANT NAME: TOOELE ARMY DEPOT

MAILING ADDRESS: SIOTE-EO-EO (BLDG 8). TOOELE ARMY DEPOT. TOOELE. UT 84074

PHONE NUMBER: 435-833-3504

WELL LOCATION: You are authorized to drill 10 Monitor Wells. SEE BELOW.

WELL UTM COORDINATES:

WELL ACTIVITY: NEW (X) REPAIR ( ) REPLACE ( ) ABANDON ( )
CLEAN ( ) DEEPEN ( )

WELL COMPLETION DATE: _____

NAME OF DRILLING COMPANY/LICENSEE: _____

_____ _____

Owner/Applicant Signature Date

***COMPLETE, SIGN AND RETURN THIS PORTION UPON FINAL WELL COMPLETION - DO NOT GIVE THIS CARD TO LICENSED WELL DRILLER - YOU MUST RETURN IT.

STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416
Fax No. 801-538-7467

COMMENTS: _____

MONITOR WELL LOCATIONS:

(1) N 1644 W 234 from the SE corner, S07 T 3S R 4W SLBM
(2) N 1456 E 1355 from the SW corner, S17 T 3S R 4W SLBM
(3) N 649 E 2187 from the SW corner, S19 T 3S R 4W SLBM
(4) N 1946 E 1863 from the SW corner, S19 T 3S R 4W SLBM
(5) S 1731 E 433 from the NE corner [redacted]
(6) S 125 E 1076 from the NW corner, S19 T 3S R 4W SLBM
(7) S 125 E 1076 from the NW corner, S19 T 3S R 4W SLBM
(8) S 413 W 2406 from the NE corner, S30 T 3S R 4W SLBM
(9) S 817 W 256 from the NE corner, S13 T 3S R 5W SLBM
(10) N 2507 W 34 from the SE corner, S24 T 3S R 5W SLBM

AUG

DRILLER (START) CARD for Monitor WELL#: 0415004M00

IMPORTANT: THIS CARD MUST BE RECEIVED BY THE DIVISION OF WATER RIGHTS PRIOR TO THE BEGINNING OF WELL CONSTRUCTION -- REQUIRED ONLY FOR WELLS DEEPER THAN 30 FT.

OWNER/APPLICANT NAME: TOOELE ARMY DEPOT

MAILING ADDRESS: SIOTE-EQ-EO (BLDG 8), TOOELE army DEPOT, TOOELE, UT 84074

PHONE NUMBER: 435-833-3504

WELL LOCATION: You are authorized to drill 10 Monitor Wells. SEE BELOW.

WELL UTM COORDINATES:

WELL ACTIVITY: NEW (X) REPAIR ( ) REPLACE ( ) ABANDON ( )
CLEAN ( ) DEEPEN ( )

PROPOSED START DATE: 9-1-04

PROJECTED COMPLETION DATE: 8-1-05

LICENSE #: 625 LICENSEE/COMPANY: layne christensen Co.

GS

Licensee Signature

8-29-04

Date

NOTICE TO APPLICANT: THIS CARD IS TO BE GIVEN TO A LICENSED UTAH WATER WELL DRILLER FOR HIS SUBMITTAL PRIOR TO WELL CONSTRUCTION.

STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416
Fax No. 801-538-7467

MONITOR WELL LOCATIONS:

(1)	N	1644	W	234	from the SE corner,	S07	T	3S	R 4W SLBM
(2)	N	1456	E	1355	from the SW corner,	S17	T	3S	R 4W SLBM
(3)	N	649	E	2187	from the SW corner,	S19	T	3S	R 4W SLBM
(4)	N	1946	E	1863	from the SW corner,	S19	T	3S	R 4W SLBM
(5)	S	1731	E	433	from the NE corner,	S19	T	3S	R 4W SLBM
(6)	S	125	E	1076	from the NW corner,	S19	T	3S	R 4W SLBM
(7)	S	125	E	1076	from the NW corner,	S19	T	3S	R 4W SLBM
(8)	S	413	W	2406	from the NE corner,	S30	T	3S	R 4W SLBM
(9)	S	817	W	256	from the NE corner,	S13	T	3S	R 5W SLBM
(10)	N	2507	W	34	from the SE corner,	S24	T	3S	R 5W SLBM

WELL DRILLER'S REPORT
State of Utah
Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

Well Identification

Non-Production Well: 0415004M00 WIN: 30269

Owner *Note any changes*

TOOELE ARMY DEPOT
SIOTE-EO-EO (BLDG 8)
TOOELE ARMY DEPOT
TOOELE, UT 84074

Contact Person/Engineer: Richard Jirik / Parsons

Well Location *Note any changes*

N 2507 W 34 from the SE corner of section 24, Township 3S, Range 5W, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation,local well #) C-44

Drillers Activity Start Date: 09/01/04 Completion Date: 01/14/05

Check all that apply: ☒ New ☐ Repair ☐ Deepen ☐ Clean ☐ Replace ☐ Public Nature of Use: Monitor Well

If a replacement well, provide location of new well. N/A feet north/south and N/A feet east/west of the existing well.

DEPTH (feet) FROM	TO	BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0	300	9	Percussion Hammer	N/A

Well Log

DEPTH (feet) FROM	TO	WATER	PERMEABLE High	PERMEABLE Low	UNCONSOLIDATED CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER	CONSOLIDATED ROCK TYPE	COLOR	DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistancy, water bearing, ordor, fracturing, minerology, texture,degree of weathering, hardness, water quality, etc.)
0	275				X	X		X	X					
275	300	X				X		X	X					

Static Water Level

Date 11/22/04 Water Level 275 feet Flowing? ☐ Yes ☒ No

Method of Water Level Measurement WLI If Flowing, Capped Pressure N/A PSI

Point to Which Water Level Measurement was Referenced Ground Level Elevation N/A

Height of Water Level reference point above ground surface N/A feet Temperature N/A degrees ☐ C ☐ F

Construction Information

DEPTH (feet) FROM	TO	CASING: CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	DEPTH (feet) FROM	TO	☒SCREEN ☐PERFORATIONS ☐OPEN BOTTOM: SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
0	280	4" Sch. 40 PVC	40	4	280	300	.010	4	Factory Slot

Well Head Configuration: Flush Mount Access Port Provided? ☒Yes ☐No

Casing Joint Type: Flush Thread Perforator Used: N/A

Was a Surface Seal Installed? ☒Yes ☐No Depth of Surface Seal: 277 feet Drive Shoe? ☒Yes ☐No

Surface Seal Material Placement Method: Tremie Bentonite Pellets and Bentonite Grout

DEPTH (feet) FROM	TO	SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION: SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	272	Bentonite Grout	72 Bags	50 lbs each
272	277	Bentonite Pellets	2 Buckets	50 lbs each
277	300	16-40 Silica Sand	20 Bags	50 lbs each

Well Development and Well Yield Test Information

DATE	METHOD	YIELD	Units Check One GPM	CFS	DRAWDOWN (ft)	TIME PUMPED (hrs & min)
	N/A					

Pump (Permanent)

Pump Description: N/A Horsepower: _____ Pump Intake Depth: _____ feet

Approximate Maximum Pumping Rate: _____ Well Disinfected upon Completion? ☐Yes ☐No

Comments Description of construction activity, additional materials used, problems encountered, extraordinary circumstances, abandonment procedures. *Use additional well data form for more space.*

N/A

Well Driller Statement

This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name LAYNE CHRISTENSEN COMPANY (Person, Firm, or Corporation - Print or Type) License No. 626

Signature _____ (Licensed Well Driller) Date: February 4, 2005

APPENDIX B

Wednesday 11/17/04 Weather: clear (~30°) no wind

WI

6:45 I arrive at 614. Jeff Bigelow onsite. I do daily quality control entry for yesterdays shift

7:10 I arrive at TEAD gate and get vehicle pass and head thru sanitary landfill to the site of C-44

7:33 Arrive at C-44. Rig and one pipe truck onsite I call Tom to get his whereabouts. No answer

8:04 Tom calls. They had expired registrations on 2 vehicles yesterday and has to update this morn.

8:42 Crew arrives with truck & compresor. We have H&S and inspect Decontes rig

9:03 Crew spread visqueen on ground under rig and back it over stakes location. The Sullair compressor has been returned to our crew and it is mounted on a flatbed truck Crew moves it into position and tries to Jumpstart the pipetruck

9:20 Jeff Bigelow calls to ask that while decontaminating after this hole if we could siphon/pump all free water in Drums from C-41, C-42 & C-44 into the black baker tank

9:45 Dave heads back to 90-Day to get wheel barrow and other ancellary equipment. ~~Dave~~ WI and Nate and Tom work on rig further. and duct tape rods

10:20 Dave Returns to site. Tom puts new rebuilt bit on

10:31 Begin Drilling. Carl Cole calls and askes that I view bubble on level as to plumbness as well as driller. In 3 directions the bubble falls betwe the lines on the level

10:42 We recheck plumbness. Looks good

11:46 @ 40' fuel line cracks so crew replaces with the new style "Double nutted" line that Christain brought out yesterday

13:36 @ 70' Carl Cole onsite

14:31 @ 120' Crew breaks to fix wheel barrow

11/17/04 (cont)

15:10 Richard had called earlier and would like Tom to stop at 614 after shift to disguss Well completion (subsurface) at C-42 so I call Steve at Violia to see when we might be let out of gate. He is sending 2 guys out at ~~4~~: 16:00 so we will shut down in time to meet him there

15:42 Carl Cole back onsite

15:50 160' bgs. we shut down and head to gate O.G.G where Carl Cole will let us out, Tom and crew go to talk to Richard Jurik in the 90-Day yard I head to Building 614 to make file copies and do Daily quality control report

16:15 Off site

11/17/04

Thursday 11/18/04 weather: clear (30°) no wind

7:00 I arrive at 614. Richard asks that I have crew vacate C-42 site as Violia will be developing the well today. I head there and call Tom to meet me there.

7:20 Tom arrives & we warm up vehicles and move them. I again call "outback shack" to service outhouse. He will be by today and next monday

7:40 Carl Cole calls and says he will wait at 066 gate to let us in. Tom goes to 90-Day for his gloves. Nate will drive from truck into site as we expect we may hit water this afternoon (water level is 256 in B-51 an apparent well on our contour)

8:00 I go thru gate and take key to C-42 to Violia. Will meet crew at well.

8:15 Crew is at C-44 changing air filters on rig & compressor. I do rig inspection

8:30 We have H & S tailgate

8:38 Begin drilling at 160' bgs

8:45 Carl Cole onsite delivering Haz Waste Labels

10:01 Dave and Nate go to 90-Day yard to get the secound pipe truck. I call Mark at Violia to let them in and out of gate

10:10 Fuel line stretches and breaks above the secound vlv

10:30 Dave & Nate return with pipe truck and services outho

10:41 Drilling @ 186'.

12:05 @ 222' the head is very hot and fireing incosistantly Crew shuts down to cool off

12:28 Begin drilling again Carl Cole stops by

13:24 @ 234' the fuel pump on the hammer goes out. Crew has a backup that they can install after pirating a few of the parts. We are drilling some strongly cemented material.

14:35 Begin Drilling again

15:05 @ 240' bgs the hydraulic pressure on the throttle

11/18/04

continues to bleed off. Crew finds that the leak is on the actuator to the fuel pump. They determine that either the male nipple is failing or the female end of a 50 ft long hose. Tom will take the actuator back to the shop and replace the nipple and reattach it in the morning hoping the hose is not the issue

15:30 I call Richard and Earl and tell them the situation. Richard was encouraging us to get water from WW3 today as no TEAD employees will be available tomorrow. I assure him there is no chance we will be slurrying the well tomorrow so we wont worry bout water till ~~tomorrow~~ MJ Monday. I leave crew onsite to work on rig

Friday 11/19/04 weather: foggy (~30°) no wind.

7:00 I arrive at 614 and get the PID and sample cooler and ice. I head to TEAD main gate

7:25 I arrive at C-44. Tom calls me from C-42 to see if he can get in back gate with Well construction materials. I call Violia. Steve will meet them at gate and let them in. Carl Cole Dowses up on the UCD side of the fence. I fill him in on whats up.

7:40 Crew onsite. We have H & S.

7:55 Tom reinstalls actuator

8:15 Still leaking. Crew removes the 55 foot long hose and Tom runs to town to replace it. I do rig inspection while he's gone

9:25 Tom back onsite Crew installs hose Expecting to contact saturated zone today I calibrate PID 104.3 on 100 ppm isobutylene

10:30 Hose is installed, filled with hydraulic fluid, pumped bleed air from hose and actuator is reattached Crew now fuels the head with diesel and additives. Safety line spool is jammed. Crew retrieves and reattaches to harness

11:05 While hose is full and functioning it appears not to have the pressure it should. Crew tries again to bleed excess air from the line

11:15 Crew is ready to try drilling. They warm up rig

12:02 Still trying to bleed line. Carl Cole onsite

12:20 Drilling @ 240'

14:38 @ 270 we get a hint of water in a clay layer We are going to pull up 10', take rod off and take a water level.

14:49 ~~@ 2nd~~ Water Level = 258.65 Jeff Bigelow suggests we contact operations at this time as we would now begin to contain waste and would need to move it to the 90 Day yard and it is late in the day if any problems should arise

11/19/04

14:55 I phone Carl Cole to update him on situation and phone Steve Kubaki at Veolia Water to see if he can let us out at OG-6 gate

15:05 We meet Steve at gate - Crew will go to C-42 and park a rig over well head to further secure the well. It has only a locked compression fitting on it at this time. I head to 614 to make file copies, fill in quality control report and confer with Richard Irick.

16:00 Offsite

11/19/04

Monday 11/22/04 Weather: clear (29°) no wind

7:11 I arrive at C-44

7:49 Tom calls to see if I can get him in OG6 gate I am unable to reach anyone at Viola so I suggest he come around to main gate.

8:15 Crew arrives onsite. Warm up rig

8:25 We have H&S meeting

8:40 We take water level 258.40 ft bgs
I do rig inspection while crew sets up secondary containment

9:00 I lable Drums (PARSN2043270#)

9:10 I calibrate PID (104.8 ppm on 100ppm isobutelene) while crew drills back down to 270

9:14 Begin drilling at 270

10:28 Hole completed to 300' bgs
4 Drums of cuttings generated PARSN2043270I thru 04

10:43 Crew moves pipe truck and moves in well construction material truck. We still have ~500 gallons of water in the secondary containment tank. I call Viola to see if we might use ~~there~~ their 1000 gal poly tank to transport water to 90 day. Last hole we used our water truck but the baffels inside make it difficult to decon. Steve Kubaki is not available but will call us later today

10:50 Begin well construction by threading a 6" long 4" diameter PVC Shedule 40 bottom cap to 2-10' screen sections (0.010 slot 4" Shedule 40 PVC) and then lowering downhole adding 10' blank sects of Schedule 40 4" PVC.

11:27 280' of 10' blanks have been added and top of well is flush with ground surface. Tom lifts well casing a bit to keep in suspention so that it is straight. Tom lifts 4" steel casing a bit so we know bit is open.

11:35 Crew begins adding 50 lb bags of 16-40 colorado silica sand by pouring in a funnel at the surface

11:45 Carl Cole stops by site

11/22/04 (cont)

12:28 20 bags of sand has brought top of sand to 277.30 ft bgs
Volume calculation
300 - 277.30 = 22.70 feet of annulus
The hole volume per foot of annulus is 0.35 ft^3 (P.48)
A bag of sand is 0.5 ft^3
22.7 × 0.35 = 7.94 ft^3
7.94 ÷ 0.5 = 16 bags should fill this space but pore space in the gravels and over reaming of the hole can account for the 4 additional bags used

13:01 Crew has added 1-5 gallon bucket of Cetco coated bentonite pellets and needs to procure additional buckets from the C-42 wellsite. We decide to take the water trucks with us and fill them while we are at it

13:25 Mark Bean (Violia) lets us out OGG. He says I can use thier water tractor to move containment tank water to the 90 day yard
Crew goes to water well 3 with 2 trucks
I head to 614 to unload samples & cooler

14:30 We head back to C-44, I drive to Violia to get the tractor

14:50 At C-44 we pump water into tank. Crew adds additional pellets to well until top of seal is at 271.9 ft bgs. A total of 2.5 buckets used Cetco labels states 28.25 pounds of tablets are needed to fill one linear foot of the annular volume for this well & borehole (277.30 - 271.9 = 5.4 feet ∴ 5.4 × 28.25 = 152.33 lbs = 3 buckets) We are ½ bucket short of calculated volume so some caving must have occurred
Crew is cleaning up and heading home. I drive tractor to 90 Day yard to unload into Baker tank.

15:15 I unload tank into Baker tank. Pump seal has a small leak. I capture water in a bucket and empty into tank
I call Tom to tell him we must fix or replace pump before using again

16:20 I return tank to Violia & Steve Kubaki

11/22/04 (cont)

16:40 Back at C-44 I take another water level 258.52. Borehole seal is underwater so no need to hydrate. I unload hoses and do field activity report and put locking bolts on the 4 drums

17:20 I leave site thru the main gate. I will make file copies at 614 tomorrow

Matt Lucas 11/22/04

Tuesday 11/23/04 weather: partly cloudy (~40°) windy

7:02 I arrive at OGG gate. Mark Bear (Violia) will come up and let me in. Terry (Violia) also waiting at gate

8:16 Crew arrives onsite

8:24 We have H&S tailgate

8:40 Crew sets up to slurrey well. I do my inspection

9:03 Crew begins mixing slurry. 2-50lb bags of Pure Gold Bentonite powder per 18 gallons of water makes a grout with 30% solids. They mix enough grout to fill the annulus to the surface and then begin pulling pipe

10:20 I change out locking bolts on drums and wash off drums

14:00 Crew has finished slurrying wells with 68 bags of grout. Each bag yields 2.2 cubic feet. Each foot of annulus is 0.35 ft^3. ANulus extended from 271.9 feet to the surface.

$271.9 \times 0.35 = 95.2\ ft^3 / 2.2\ ft^3/bag = 43$ bags

As in the previous holes the calculated volume is well below the quantities used. This is likely due to overreaming and the porosity of the formation in the borehole walls.

We marshal the 2 pipe trucks to the OGG gate where security lets us out and then move them to the 90 day yard.

14:30 I phone Carl Cole. He will meet us at gate where we can go back and get water truck rod truck, outhouse and compressor truck.

15:00 We lock drum truck in the yard with the 4 Haz Waste Drums from yesterday

Crew leaves site for the day each driving a vehicle back to SLC (Rod truck, compressor)

15:40 I head to 614 for paper work

17:45 I leave site

11/23/04

Wednesday 11/24/04 weather - overcast (~30°) 10 to

7:04 I arrive at C-44
8:13 Crew arrives at site. They top off grout and prepare to move rig. We have H&S tailgate
9:15 We are unable to get air to pressure up on rig. Crew is working on air line. I drive out main gate to 90 Day to get pump and hoses
10:55 Crew has rig running and I get violia to open 066 for them. They drive rig to C-42 where Layne mechanic will meet us to work on air problem. They are hoping to drive rig back to shop to change out defective recoil dampner but cant make the trip in present condition.
11:33 Don Yea (UID) is arranging use of a backh for digging out surface completion at C-42 I have Nate drive back with me to 90 Day yard to unload the drum truck while we wait.
12:34 Drum truck is unloaded but we need to clean the outside of many drums. Valve on water truck is frozen so we lower bucke in from top
13:10 Nate and I take water truck back to C-42 so crew can use water to mix concr
13:25 Richard Jurk has provided me with a design drawing of the subsurface comple
13:50 Crew has dug hole with UID backhoe an constructed well according to spec. They to off annulus with 2 bags 3/8" bentonite chips and hydrated. They then used 5 - 50 lb bags of 1" - rock to fill remaining 6" of annulus and a 6" pad at bottom of excavation. They the set the 18" long 12" diameter circular stee vault on the rock bed and backfilled it

11/24/04 (cont)
with an additional 6" of rock, so that the top of the vault is 4" above top of well casing. We then constructed a 3'x3' wooden frame and mixed 4000 psi rated concrete to fill hole until frame could rest upon it.
Carl Cole is onsite providing input
14:50 We then finished concrete pad to insure water would drain away from the vault. Richard Jurik and Kurt Alloway are onsite. They will provide a concrete blanket once we have finish pad. Drillers offsite
15:20 Carl and I cover well with a visqueen tent. We place a brass plug in the N. corner of the pad for survey mark.
Carl leaves site. I head to Violia to make copies of development records for construction reports
17:15 I leave depot for the weekend. Crew will return to Decon pipe and work on surface completion at C-44 on monday and tuesday while the rig is in the shop having recoil dampers replaced. I will stay in office and work on well reports

11/24/04

Thursday 12/2/2004 weather: clear (~10°) wind 10 mph to N-NW

7:20 I arrive at UID and drive to location of C-43. Rig, rod truck and compressor are in place to drill but mast is not raised. I drive to 614

7:40 Greg is at 614. I had expected crew to begin drilling C-43 with Richard Jurik yesterday as I was attending a family funeral but Greg says crew did not bring the rig out til late in the day - it was in Layne shop having recoil dampners replaced

8:05 On my way to C-44 to find crew I run into Carl Cole. He is concerned about surface completion at C-44. We drive to site

8:15 Viola crew and Jeff Bigelow are at site waiting for Layne crew to vacate site They did not build a surface completion on Tuesday as anticipated because the ground was frozen. They are cleaning up excess debris and construction materials. I give Jeff Bigelow Hannam construction spec's and then head to C-44 to wait for drillers

8:50 Drillers onsite. We have H's

9:15 They raise mast and set cyclone

10:00 The hydraulic fluid reservoir is overflowing. We are containing overflow. Layne mechanic says this is due to the lines feeding the governor being frozen. He says to let the rig run and eventually heat will thaw. I do rig inspection

10:39 Begin drilling C-43

11:20 @ 30' crew cuts out frozen section of turbo hose and resplices

11:40 Drilling again

12:29 @ 70' cyclone is plugged

12:49 Drilling again

13:39 @ 100' injector on head is leaking

13:53 Drilling again

Monday 12/13/84 weather clear (~45°) no w

7:17 Arrive at C-43. Crew is on site. They are warming up rig in order to lower Derr and move so they can do the surface completions here. I head to 614 to see whats up

8:15 Back at site rig is off hole & crew is collecting plastic from under rig & cook fluids if trapped

9:10 Crew is going to dig the subsurface con hole by hand and construct as per Richard Jurks hand drawn diagram for "Flush Mount Surface Completion." I inspec rig for its final trip back to the shop before it leaves for the winter (If we d Drill D-14 it will be with a rotary as bedrock is anticipated)

9:35 We have H & Safety tailgate regarding lifting hazards during surface completions Nate Salazar and Dave Kyle have been replaced by Mike Wyatt and Ricky Smith today. Both have worked on this site on casings wells and have read and s off on the SSHSP.

11:45 Crew has poured final batch of cemen at C-43 (4000psi mix) I will stay and finish work while they go to depot get rebadge and procure vehicle pass for water truck so they can go to C-44 co

12:30 Carl Cole calls and he has new governm locks for 5 wells. We will meet at back & he will pass them to me. I procure loc and change out temp locks at D-16, C-4 C-42, C-43, C-44, I also apply ID lables a D-16 and C-13. Only C-44 is unlabled. Label on order. (C-43 and C-42 are also unlabled they are subsurface. Richard is procur

12/13/04

Paddle posts (-) so they can be marked and I.D.ed.

14:40 I check with crew at C-44. They have set 10" protector casing and form for pad but were unable to dig bollard holes by hand due to boulders/cobbles. They are waiting for an auger rig which Nate is bringing out. He is quite late and is likely hung up at the gate. I go back and put brass plug w/ at C-43 and finish concrete so more

14:55 @ 90 Day yard prosonic crew is pumping off free water from our cuttings drums from C-42, 43, and 44 so I don't need to. I go watch Prosonic set up as I will be doing this over side soon

16:20 Back at C-44 crew has all bollards in and cemented. It is getting too cold/dark to paint now. Crew will do this tomorrow and decon rig & pipe truck I call Viola to get an escort out at OG6

16:40 I meet Tom at gate & do Darley while waiting for Violia

16:50 Jeff Hammann lets us out. We finish Darleys and go to 90-Day to get rod truck to take back to Layne Shop

17:50 Crew leaves 90 Day for SLC. I go to 614 for copies and to check in w/ Richar if he has arrived

18:15 I leave site for SLC. I won't be in tomorrow but will get Tom to return 90-day key and new well key to Jeff before he leaves after painting completions and decoming

Ted Hamm

FIELD ACTIVITY REPORT

Project Number/WBS: 744139.20010 Date: 11/16/04

SWMU: 58 Arrival Time: 7:10

Team Leader: Richard Juneck Departure Time \Destination: 13:40

Team Members: Matt Ivers, Jeff Bigelow Weather: clear (~45°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 9:05 People Present TK, DK, NS, ME

Topics Discussed: PPE during D-con

Logbook Book # B071503 Page # 90, 91

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:10 arrive at C-47 8:10 Crew arrives at 90-Day with Chris Davis to inspect recoil dampner. Steam cleaner line is frozen and needs thawing 8:30 Tom leaves for fuel 9:05 Dave begins decanning 2ND pipe truck 12:50 I go to barge & get vehicle pass as our next hole is on TEAD property 13:30 Crew finishes D-con of rig and pumping sump. They spen afternoon bagging and procuring vehicle passes for all equipment and Mob Rig and pipe truck 1 to site of C-44

FIELD ACTIVITY REPORT

Project Number/WBS: 744139.20010 Date: 11/17/04

SWMU: 58 Arrival Time: 6:45

Team Leader: Richard Jurek Departure Time \Destination: 16:15

Team Members: Matt Ivers Jeff Bigelow Weather: clear (30°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☐ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 8:45 People Present TK, DK, NS, MI

Topics Discussed: Emergency #'s for leaving TEAD property

Logbook Book # B071503 Page # 92,93

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 6:45 arrive @ 614 7:10 Arrive @ TEAD Gate 7:33 Arrive @ C-44 8:42 Crew arrives @ C-44 with truck & compressor Have H&S tailgate 9:03 Set visqueen & move rig in place 10:31 Begin Drilling C-44 11:46 fuel line cracks - replace with new "Double nutted style". 15:50 160' bgs 16:08 At 614 making copies 16:16 offsite

FIELD ACTIVITY REPORT

Project Number/WBS: 744139.20010 Date: 11/18/04

SWMU: 58 Arrival Time: 7:00

Team Leader: Richard Jurick Departure Time \Destination: 15:30

Team Members: Matt Ivers Jeff Bigelow Weather: clear (30°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☐ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 8:30 People Present TK, DK, MI, NS

Topics Discussed: Access road hazard

Logbook Book # B071503 Page # 94

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N **Current Location:** **Update DITF?: Y / N**

Notes: 7:00 Arrive at 614 Richard directs us to vacate the C-42 site as Violia Development crew will need access to wellhead. 8:00 Carl Cole provides access thru OG6 gate to well C-44 8:15 I DO req inspection 8:30 H:S tailgate 8:38 Begin drilling at 160'. 845 Carl Cole outside with Haz Waste Lable 10:01 Dave's Note go to 90-Day for pipetrack's outhouse: 10:10 Fuel line breaks 10:41 Drilling again 12:05 Overheating 12:28 Drilling again 13:24 @ 234 fuel pump out-crew has a backup 14:35 Drilling again 15:05 240' bgs. Hydraulic hose from throttle to fuel pump is leaking. Crew effects repair 15:30 I leave site

FIELD ACTIVITY REPORT

Project Number/WBS: 744139.20010 Date: 11/19/04

SWMU: 58 Arrival Time: 7:00

Team Leader: Richard Jurik Departure Time \Destination:

Team Members: Matt Ivers Jeff Bystrom Weather: Foggy (~30°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 7:40 People Present TK, DK, NS, ME

Topics Discussed: Proper PPE in the saturated zone

Logbook Book # B0#1503 Page # 96

M/C Parties Notified

- ☐ TEU Response ☐ Lockheed Monitoring
- ☐ Range Control/Security (460)
- ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:00 Arrive at 614 to gather PID and cooler
7:25 Arrive at C-44 7:40 Crew arrives. Have H&S tailgate
7:55 Tom installs activator with new nipple 8:15 Still leaking
Crew removes 55' hose & Tom goes to base to replace
9:25 Tom back onsite. Installs hose. I calibrate PID 10:30 Hose installed
but hydraulic pressure inadequate - crew attempt to bleed. 12:20
Drilling @ 240 14:38 @ 270 we pull pipe (10') and take W.L
Cutting still appear dry but W.L = 258.65. We will start running
cuttings on Monday 15:05 Leave Depot I go to 614 to make file copies
crew goes to C-42 to secure well head 16:00 offsite

Project Number/WBS: 744139.20010 Date: 11/22/04

SWMU: 58 Arrival Time: 7:11

Team Leader: Richard Jurk Departure Time \Destination: 17:20

Team Members: Jeff Bigelow, Matt Ivers Weather: clear (~29°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 8:25 People Present TK, DK, NS, MI

Topics Discussed: Drum Truck Hazards

Logbook Book # B071503 Page # 98, 99, 100

M/C Parties Notified

- ☐ TEU Response ☐ Lockheed Monitoring
- ☐ Range Control/Security (460)
- ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:11 arrive at C-44 8:15 Crew arrives 8:25 We have H&S meeting 8:40 Water Level 258.40' bgs, set up containment table drums 9:10 calibrate PID 9:14 Begin Drilling @ 270 10:28 complete hole to 300' bgs - 4 drums generated PARSN20432701-04 10:50 Begin well construction - screen 299.5 - 297.5 11:35 Begin displacing sand pack - top of sand 277.3 13:01 Add bentonite seal Top of seal = 271.9' bgs 15:15 Unload poly tank of containment water in Baker Tank at 90 day yard 16:20 Return tank to Visalia 16:40 Lock drums 17:20 Leave site

Project Number/WBS: 744139.20010 Date: 11/23/04

SWMU: 58 Arrival Time: 7:02

Team Leader: Richard Jurk Departure Time \Destination: _____

Team Members: Matt Lovers, Jeff Bigelow Weather: partly cloudy (240°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time _____ People Present TK, DK NS MI

Topics Discussed: Pipe pulling Hazards

Logbook Book # B071503 Page # 101

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:02 Arrive at C-44 8:16 Crew arrives onsite 8:24 H&S tailgate 8:40 Rig inspection 9:03 Begin mixing slurry to grout well 14:00 Well grouted from 271.9 to the surface All pipe out of hole. 14:30 Mob 2 pipe trucks, rod truck from truck out house, compressor truck off depot to the 90 Day yard 15:00 Crew takes rod truck and compressor back to SLL I go to 614 for paperwork

Project Number/WBS: 744139.2001C Date: 11/24/04

SWMU: 58 Arrival Time: 7:04

Team Leader: Richard Jurk Departure Time \Destination: 17:15

Team Members: M. Ivers J. Bigelow Weather: overcast (~30°) 10 mph to NE

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 8:13 People Present _____

Topics Discussed: Vehicle Hazards

Logbook Book # B071503 Page # 102, 103

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:04 Arrive at C-44 8:13 Crew arrives We have H&S. They top off grout & warm rig to move 9:15 Crew repairs airline on rig 10:55 Drive rig to C-42 for Layne mechanic to work on 11:33 Dan Yea arranging for backhoe to dig C-42 subsurface completion 12:34 Unload Brown truck no 80-Day 13:10 Take water truck to C-42 for concrete 13:50 Crew constructed C-42 as per Richard Jurks as built. Carl Cole does overside 14:50 Drillers offside I do finish work 15:20 Cover with visqueen to prevent freezing. Kurt & Richard will add blanket 17:45 offside

Project Number/WBS: 744134 20010 Date: 12-2-04

SWMU: 581 TEAD Well Development C-44 Arrival Time: 08:00

Team Leader: J. Bigelow Departure Time \Destination:

Team Members: J. Hamman, J. Muister Weather: Cold, windy, 15-30°F

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☐ Well Installation _____
- ☒ Well Development C-44
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 08:15 People Present See above

Topics Discussed: Stay warm, Slip hazards on snow

Logbook Book # 1 Page # 56

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: (Purge) / Rinse / Soil / Other #ES(s) PARSN204 33701

Closed?: Y /(N) Current Location: UFP 90-day yard Update DITF?: (Y)/ N

Notes: 08:00 Meet Veolia at 06-6 to let me in TEAD 8:15 Arrive on-site, Layne cleaning up site, have H+S meeting 8:25 Layne leaves site + Veolia starts to setup on well 09:00 w.l. = 259.63 ft bgs, Depth of well = 300.81 10:00 Start bailing 12:30 Bailed 105 gallons + Surged well 2x, install pump 14:03 Started pumping at ~7 gpm and started aquifer test 14:50 Backflush 5x 15:44 Stopped pumping, pumped 588 gallons, did ~~surg~~ recovery test 16:25 offsite to UFP 90-day yard 17:00 Pumped ~700 gallons of purge water into Baker tank PARSN204 33701, cont. development tomorrow

Project Number/WBS: 744139 2000C Date: 12-3-04

SWMU: 58 / Manitary Well Development Arrival Time: 08:00

Team Leader: J. Bigelow Departure Time \Destination: 13:30

Team Members: J. Hamman, J. Maisha Weather: Cold, 15-30°F, mod wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☐ Well Installation _____
- ☒ Well Development C-44
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒D ☐C ☐B ☐A

Health and Safety Briefing: Time _____ People Present _____

Topics Discussed: _____

Logbook Book # - Page # -

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: (Purge) / Rinse / Soil / Other #ES(s) PADSWZ043370 1

Closed?: Y / (N) **Current Location:** UID 90-day yard **Update DITF?:** Y / (N)

Notes: 08:21 Arrive at C-44, continue development of well from yesterday 08:52 pump on ~7 gpm 09:07 - Backflush well 5x 10:08 - Pump off, pumped 1,008 gallons total + 100 gallons backed 10:15 - Remove pump 11:28 Start decon 13:08 - Arrive at 90-day yard to pump ~500 gallons into Baker tank (PADSWZ043370 1) 13:30 Leave UID 90 day yard

C-44

Project Number/WBS: 744139.20010 Date: 12/13/04

SWMU: 58 Arrival Time: 7:16

Team Leader: Richard Jurk Departure Time \Destination:

Team Members: Matt Wes, Jeff Bygelow Weather: clear (~45°) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation C-43, C-44
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 9:35 People Present TK, NS, TMW, RS

Topics Discussed: lifting hazards during well completion

Logbook Book # B071503 Page # 113

M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control/Security (460) ☐ Pillbox Support ☐ Meteorology

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil / Other #ES(s)

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:17 Arrive at C-43 crew is onsite warming up rig to tower down. 9:10 Crew begins digging for subsurface well vault. I inspect rig off hole. 9:35 H & S tailgate 11:45 crew completes C-43. I do finish work on cement while they go badge and get vehicle permit for water truck to do completion at C-44. Carl gives me locks for D-16, C-41, C-42, C-43 and C-44. I go change out locks & label D-16, D-13. 14:40 Crew is at C-44 but can't dig bollards. Nate is bringing out auger rig. 16:20 Bollards 10' casing & pad cemented. Too cold to paint. 16:50 Meet at gate 17:30 Leave 90 Day yard. Go to 614 for copies 18:15 Leave site

HEALTH AND SAFETY BRIEFING

Date: 11 / 16 / 04 Time: 9:10

Site Health and Safety Officers(s)

WELL C-44

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Decanning with the steam cleaner is the
2. most likely time to have impacted soil or
3. water contact skin or eyes. Always wear proper
4. PPE durring this activity
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11 / 17 / 04 Time: 8:45

Site Health and Safety Officers(s)

WOUC-44

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. This new location is on the TEAD property
2. and requires passing through the main gate
3. a long way away on getting the gate
4. opened at 0600. To get gate opened call
5. Carl Cole 801 971-1704
6. Viola Wade 435-833-9005
7. TEAD Security 435-833 2314
8. These #s are posted in my logbook, back cover
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11/18/04 Time: 8:30 323

Site Health and Safety Officers(s)

WELL C-44

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4. Tom Kerr	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. On the access road into site of C-44
2. the west bank of the road has washed
3. out and undercut slightly in one location
4. be aware of this potential hazard
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11 / 19 / 04 Time: 7:40

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

WELL C-44

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. We should be encountering groundwater today
2. and we are in the heart of the groundwater
3. plume so be sure to wear nitrile gloves
4. safety glasses and avoid hand to mouth
5. contact
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11/22/04 Time: 8:25

Site Health and Safety Officers(s)

MONITORING WELL C-44

ATTENDEES SIGNATURE

1.	11.
2.	12.
3. Tom K	13.
4. Walter Salazar	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. We will be moving drums today. There
2. are several hazards associated with
3. this activity. Pinch hazards from the drum
4. clamp & drums, overhead hazards from the
5. boom and suspended drums, respiratory hazards
6. from the exaust fumes from the drum truck.
7. Be aware of avoiding any incidents
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

Date: 11/23/04 Time: 8:24

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

WELL C-44

1.	11.
2.	12.
3.	13.
4. Tom Ka	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Pulling pipe is a slip trip fall hazard and is a
2. potential back injury hazard. Be certain of
3. your footing when pulling the pipe and bend your
4. knees when lifting
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

C44

HEALTH AND SAFETY BRIEFING

Date: 11/24/04 Time: 8:13

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. We will be moving Rig and doing some
2. backhoe work today so be sure to use
3. all vehicle safety knowledge and be aware
4. where other people and vehicles are
5. before backing up around site. Watch for
6. small equipment (wheelbarrows) as well
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

C-44

HEALTH AND SAFETY BRIEFING

Date: 12/2/04 Time: 08:15

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1.	11.
2. Jeff Haman	12.
3. Jason Maistros	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Try to keep warm
2. Watch slip+fall's on snow + plastic sheeting
3.
4.
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

C-43, C-44

HEALTH AND SAFETY BRIEFING

Date: 12/09/04 Time: 08:30

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Watch for overhead obstructions
2. Careful when lifting grout bags
3.
4.
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING

C-43, C-44

Date: 12 / 13 / 04 Time: 9:35

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Working on surface completions requires
2. much bending, lifting, & shoveling. Use proper
3. lifting technique when doing these tasks
4.
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

Well C-44

Layne Christensen Company Job Site Safety

Date 11/16/04 | Site: TEAD Phase II RFI @ SWMU 58 | Client: USACE

Rig/Crew: Tom Kevo, Dave Kyle, Nate Salazar

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☐	☐	☑
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Inspected Decon of 2 pipetrucks and Rig ✓
Inspected Recoil Dampner and Christian Davis
Provides new style fuel line

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☐	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

Layne Christensen Company Job Site Safety

Date 11/17/04 | Site: TEAD Phase II RFI @ SWMU 58 Well C44 | Client: USACE

Rig/Crew: Tom Kerr, Nate Salazar, Dave Kyle

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☐	☐	☑
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Set up rig on C-44 & inspect. ✓
Compressor now mounted on flatbed & chained down ✓

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

Layne Christensen Company Job Site Safety

Date 11/18/04 | Site: TEAD Phase II RFI W9WC-44 | Client: USACE

Rig/Crew: Tom Kerr Nate Salazar, Dave Kyle

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☑	☐	☐
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Changed Filter (Air) on Rig and Compressor ✓
Repaired cracked fuel line ✓

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

Layne Christensen Company Job Site Safety

Date 11/19/04 | Site: TEAD Phase II RFI well C-44 | Client: USACE

Rig/Crew: Tom Kerr, Dave Kyle, Nate Salazar

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☑	☐	☐
Layne Safety Practice Manual	☐	☒	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Replaced 55' hose that connects throttle to fuel pump actuator (hydraulic) ✓

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

Layne Christensen Company Job Site Safety

Date 11/22/04 | Site: TEAD Phase II RFI Well C-44 | Client: USACE

Rig/Crew: Tom Kerr Nate Salazar Dave Kyle

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☑	☐	☐
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Tom says they are taking rig back to shop following this well to replace the recoil dampner which may be the source of breaking fuel lines

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

Layne Christensen Company Job Site Safety

Date 11/23/04 | Site: TBAD Phase II RFI @ SWMU 58 Well C-44 | Client: USACE

Rig/Crew: Tom Kern, Dave Kyle, Nate Salazar,

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	✓			Safety Glasses	✓		
Lifting Belt			✓	Training Certificates			✓
Gloves	✓			Hearing Protection	✓		
Safety Shoes	✓			Proper Clothing	✓		
Layne Safety Practice Manual			✓	Dust masks/Level C respirators	✓		
DOT physical card, CDL and logbooks present and up to date?			✓	Emergency numbers/HASP present and posted?	✓		

Comments: Second pipe truck onsite for water hauling
I inspect this also ✓

Site Set-up and Safety							
Hole openings covered or tied off?			✓	Timbers and set-up jacks stable?	✓		
Anchor guy lines secure, evenly tensioned and flagged?			✓	Mud or circulation pits barricaded or fenced?			✓
Excavation permit (CA) and shoring considerations?			✓	Traveling blocks, widow makers and elevators inspected?			✓
Site clean and organized? Footing?	✓			Bulk fuel stores lined and grounded?			✓
Pipe blocked and sloped from work area?	✓			Correct monitoring equipment present?	✓		
Overhead and underground lines identified?	✓			Chemicals stored away from fuel and protected?			✓
Material Safety Data Sheets present?	✓			Warning signs/Exclusion zone posted?	✓		

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety							
Kill switch operational?	✓			All mast wiring in conduits?	✓		
Vehicle pretrip inspection performed and documented?			✓	Seat belts available and used on all equipment?	✓		
Fire extinguisher present and charged?	✓			First aid/BBP kit present and stocked?	✓		
Danger points color coded?			✓	Controls identified?	✓		
Side guardrails on platform rigs?			✓	Ropes and chains in good condition?	✓		
Belts and rotating shafts guarded?	✓			All hooks have safety latches?	✓		
Cables in good shape, clamps installed properly?	✓			Pressure hoses safety chained at connections?	✓		
Good housekeeping in vehicle cabs?			✓	Spill control materials present?	✓		

C44

Layne Christensen Company Job Site Safety

Date 11/24/04 | Site: TEAD Phase II RFI | Client: USACE

Rig/Crew: Tom Kevv, Dave Kyle, Nate Salazar

Observers: Matt Wess Earl Cole

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☑	☐	☐
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Inspect Drum Truck
Crew repairs airline on rig temporarily but.
Layne mechanic comes to C42 to complete repair

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☐	☐	☑	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☑	☐	☑	Spill control materials present?	☑	☐	☐

Layne Christensen Company Job Site Safety

C-43, C-44

Date 12/13/04 | Site: Texas Phase II RFI | Client: USACE

Rig/Crew: Tom Keon Mike Wyatt, Rickie Smith Nate Salazar

Observers: Matt Wiers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt Harness	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☑	☐	☐
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments: Final Rig inspection for mob back to Layne ✓
Auger rig outside for bollards inspected ✓

Site Set-up and Safety

Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☑	☐	☐	Warning signs/Exclusion zone posted?	☑	☐	☐

Comments:
Tires, Horns, Lights, batteries, brakes, wipers, fluid levels ✓

Rig Safety

Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☑	☐	☐
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

EQUIPMENT CALIBRATION LOG
Tooele Army Depot

Eqpt. Type	Serial No.	Date	Calibration Time	Calibration Gas	Calibration Gas Lot No.	Calibrated By:	Comments	
Environmental Instruments	580U-60884 329	9/15/04	10:00	100 PPM ISOBUTELENE	903169	Matt Ivers	101.6 ppm	D-12
Photo Ionization		9/16/04	9:45				102.2	"
Detector 580 B		10/7/04	11:50				99.2	D-13
		"	13:40				97.8	"
		10/11/04	8:00				97.6	"
		10/19/04	12:05				103.4	D-16
		10/20/04	8:35				101.2	"
		11/1/04	8:05				96.7	C-41
		11/2/04	12:55				97.6	"
		11/11/04	7:45				103.4	C-42
		11/19/04	9:25				104.3	C-44
		11/22/04	9:10				104.8	"
		12/7/04	12:45				101.2	C-43
		12/30/04	7:55				103.4	D-14
		1/4/05	8:50				104.2	"
		1/5/05	9:35				102.6	"
		1/6/05	11:25				103.4	"

Attachment 7-1

APPENDIX C

DRILLING LOG

DIVISION: Sacramento

INSTALLATION: Tooele Army Depot (TEAD)

SHEET 1 OF 8 SHEETS

1. PROJECT: Phase II RFI @ SWMU 58
2. LOCATION (Coordinates or Station): 7367591.88N 1404021.61E
3. DRILLING AGENCY: Layne Geoconstruction
4. HOLE NO. (As shown on drawing title and file number): C-44
5. NAME OF DRILLER: Tom Kern
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 300'
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 300' bgs
10. SIZE AND TYPE OF BIT: 9" OD open face
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Drill Systems AP 1000 Becker Hammer
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 63; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 258.40 on 8:40 11/22
16. DATE HOLE: STARTED 11/17/04; COMPLETED 11/22/04
17. ELEVATION TOP OF [redacted] Casing 4722.81 ground 4719.82
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: Matt Lee

ELEVATION / TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
10:31	0				1	
	2		Clayey Gravel (GC) 20% cobble to 6", 30% gravel fine to coarse 20% sand, med to coarse 30% clay, moderate plasticity pale brown 10YR 6/3 moist			
	4					
	6				2	
	8					0.9 min/ft
10:40	10				3	- Driller continuously checks plumbness of well - I concur
10:44	12		- Poorly Graded Sand with Gravel (SP) Trace cobble to 4", 40% gravel fine to coarse, subrounded 60% sand to silty sand fine to coarse, pale brown 10YR 6/3, moist			
	14					
	16				4	
	18					
11:04	20		- Poorly Graded Gravel with Sand (GP) 20% cobble to ~~20~~ 6", 60% gravel, fine to coarse, subround to subangular, 20% silty Sand fine to coarse brown 7.5YR 5/2, moist		5	2.0 min/ft
11:14	22					Crew ratties hoses on head together
	24					
	26				6	
	28					
11:26	30					1.2 min/ft

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE

PROJECT [illegible] HOLE NO. [illegible]

PROJECT: TEAD Phase II RFI | HOLE NO.: C-44 | SIGNATURE OF INSPECTOR: [signature] | DATE: 11/17/04

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
11:29				7	X	Rods continue to be plumb
	32		Poorly Graded Gravel with silty sand (GP) 20% cobble to 5", 50% gravel fine to coarse, subangular to subrounded, 30% silty fine sand brown 7.5YR 5/2 moist			
11:35 / 11:39	34			8	X	Slight play in head
	36					
	38					
			- increase in clay content slightly cohesive			
11:46 / 11:58	40			9	X	1.3 min/ft
	42		- as sample 7			Crew replaces old style fuel line w/ new
	44					
				10	X	Tightening fuel line
12:12 / 12:18	46					
	48					
12:21	50			11	X	1.7 min/ft
	52					
	54					
	56			12	X	
	58					
12:20 / 13:10	60		- Silty Gravel (GM) 10-20% cobble to 6" 40-60% gravel fine to coarse 10-20% silt or very fine sand grey 10YR 6/1, Dry	13	X	1.5 min/ft head needs cooling tighten bolts
	62					
	64					
				14	X	
	66					
	68					
13:29	70					1.9 min/ft

PROJECT: TEAD Phase II RFI | HOLE NO.: C-44

PROJECT: TEAD Phase II RFI | HOLE NO.: C-44 | SIGNATURE OF INSPECTOR: [signature] | DATE: 11/17/04

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
13:35			Poorly Graded Gravel with silty sand (GP) 10-20% cobble to 4", 40-60% gravel fine to coarse, subrounded to subangular, 20% silty fine sand. Brown 7.5YR 5/2 Moist to Dry	X	15	
	72					
	74			X	16	
	76					
	78					
13:43	80			X	17	1.0 min/ft
13:46						
	82					
	84					
	86			X	18	
	88					
13:58	90		- as above	X	19	1.2 min/ft
14:01						
	92					
	94					
	96			X	20	
	98					
14:10	100			X	21	0.9 min/ft
14:14						
	102					
	104					
			- as above	X	22	
	106					
	108					
14:23	110					0.9 min/ft

PROJECT: [illegible] | HOLE NO.: [illegible]

TIME	DEPTH	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
14:27		Poorly Graded Gravel with Silty Sand (GP)		23	
	112	10-20% cobbles & boulders			
	114	40-60% gravel, fine to coarse, rounded to		24	
	116	~~subangular~~ to subrounded			
	118	20% silty fine sand			
		Brown 7.5 YR 5/2, moist			
14:31	120	to dry			1.4 cu ft/min/ft
14:48				25	
	122				
	124				
				26	
	126				
	128				
14:58	130	- as above			
15:01				27	1.0 cu ft/min/ft
	132				
	134				
				28	
	136				
	138				
15:10	140			29	0.9 cu ft/min/ft
15:13					
	142				
	144	Silty Gravel (GM)			
		10-30% cobble; boulder		30	
	146	40-50% gravel round to subrounded, fine to coarse			
	148	20-30% silt or very fine			
		Sand, light grey 7.5 YR N7/			
15:25	150	Dry			

PROJECT: TEAD Phase II RFI | HOLE NO.: C-44

TIME	DEPTH	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
15:29	152	Silty Gravel (GM) 10-20% cobble or boulders 20-60% gravel fine to coarse Rounded to subrounded 20-40% silt or very fine Sand, light grey 7.5YR N7/ Dry	X	31	
	154				
	156		X	32	
	158				
15:50 11/18/04 8:38	160				2.1 min/ft
	162		X	33	
	164	-as above			
	166		X	34	
	168				
9:04 9:08	170		X	35	2.6 min/ft
	172				
	174	-as above			
	176		X	36	
	178				
9:30 9:34	180		X	37	2.2 min/ft
	182				
	184	-as above			
	186		X	38	
	188				
9:58	190				2.8 min/ft

PROJECT: TEAD Phase II RFI | HOLE NO.: C-44 | SIGNATURE OF INSPECTOR: Matt Lowe | DATE: 11/18/04

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
10:02			Silty Gravel as #31	X	39	
	192					
	194		- Gravelly Clay, (CL) high plasticity, ~10-20% fine gravel, brown 7.5YR 5/4 moist	X	40	
10:10	196		- perched water			fuel line breaks
10:41						
	198		- Poorly Graded Gravel with sand, 10-20% cobble & boulder, 40-70% gravel, rounded to sub rounded, fine to coarse 10-30% sand fine to coarse pale brown 10YR 6/3, moist			
11:04	200			X	41	3.1 min/ft
11:07	202					
	204					
				X	42	
	206					
	208					
11:19	210			X	43	1.2 min/ft
11:22	212					
	214		- Lean Clay (CL) high plasticity, trace fine gravel, brown 7.5YR 5/4 moist	X	44	
	216					
	218					
11:39	220		- as above #41	X	45	1.7 min/ft
11:43						
12:05	222		- limestone & quartzite boulders			head is too low & Rig is not running right
12:28						
	224					
				X	46	
	226					
	228					
12:52	230					4.6 min/ft

PROJECT | HOLE NO.

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
12:56			Poorly Graded Gravel as sample 41	X	47	
	232					
13:24	234					
14:35			- strongly cemented	X	48	fuel line failure fuel pump is down crew has a spare
	236					
	238		- as sample 41			
15:05	240					5.8 min/ft
11/19/04 @ 12:20			- Poorly Graded Gravel (GP) 90% fine to coarse gravel Trace cobble <10% silt & sand Grey 10YR 5/1 Dry - caliche skin on most clasts	X	49	Hydraulic Hose to Fuel Pump fails - down for the day
	242		- Strongly cemented			
	244		- very little sand			
				X	50A	
	246		- Fat Clay (CL) very high Plasticity, 10% fine gravel Pinkish Grey 7.5YR 6/2 moist	X	50B	
	248					
13:06	250		- as sample 49	X	51	4.6 min/ft
13:10						
	252		- size increases to 30% 4-5" cobble			
	254					
						Water Level 258.4 11/22/04 8:40
	256			X	52	
	258					
14:15	260					6.5 min/ft
14:18			- cuttings very moist	X	53	
	262					
			- Clayey Sand (SC) slight Plasticity, fine to med grain Brown 7.5YR 5/4, moist			
	264					
	266		- Silty clay (CL), moderate Plasticity Brown 7.5YR 5/4 moist	X	54	
	268					
			- Lean Clay (CL) high plasticity Light Yellowish brown 10YR 6/4 moist			≈270' bgs Water first Observed
14:38	270					2.0 min/ft

PROJECT TEAD Phase II RFI | HOLE NO. C-44

PROJECT: TEAD Phase II RFI | HOLE NO.: C-44 | SIGNATURE OF INSPECTOR: [signature] | DATE: 11/19/04

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS	PID
9:14 on 11/22/04	272		Lean Clay grading to Lean Clay with gravel ((CL) high plasticity, ~10% gravel to 2" subrounded to subangular Light yellowish brown 10YR 6/4, wet	X	55		1.6
	274			X	56		2.1
	276		Poorly Graded Gravel (GP) 90% gravel, fine to coarse, subrounded to subangular, 10% silt Light yellowish brown 10YR 6/4, wet				
	278						
9:44	280			X	57	3.0 mcm/ft	0.9
9:48	282						
	284		some strongly cemented layers	X	58A		0.7
	286		Gravelly Clay (CL) ~30% gravel to 3" subrounded to subangular clay has moderate plasticity very pale brown 10YR 7/4 wet	X	58B		
10:10	288						
10:13	290			X	59	2.2 mcm/ft	0.2
	292						
	294		Poorly Graded Gravel with sand (GP) 10% cobble, 60-70% gravel rounded to subangular fine to coarse 20-30% Sand, mostly coarse Multicolored, wet	X	60		1.5
	296						
	298						
10:28	300	EOH		X	61	1.5 mcm/ft	2.3

PROJECT [illegible] | HOLE NO. [illegible]

311 Rock Avenue • Golden, CO 80401
PH 303.526.4432 • FAX 303.526.4426
email: PedlerRAS@aol.com • www.rasinc.or

Integrated Subsurface Evaluation

C-44

COMPANY	: US AEC			OTHER SERVICES:	
WELL	: C-44				
LOCATION/FIELD	: TEAD				
COUNTY	: TOOELE				
STATE	: UTAH				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/08/04	PERMANENT DATUM	: GS		
DEPTH DRILLER	:			KB	: NA
LOG BOTTOM	: 296.10	LOG MEASURED FROM:	GS	DF	:
LOG TOP	: 0.50	DRL MEASURED FROM:	NA	GL	: na
CASING DIAMETER	: 0	LOGGING UNIT	: 202		
CASING TYPE	: PVC	FIELD OFFICE	:		
CASING THICKNESS:	0	RECORDED BY	: whp		
BIT SIZE	: 6	BOREHOLE FLUID	: 0	FILE	: PROCESSED
MAGNETIC DECL.	: 0	RM	: 0	TYPE	: 9512A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 140		
				THRESH:	4000

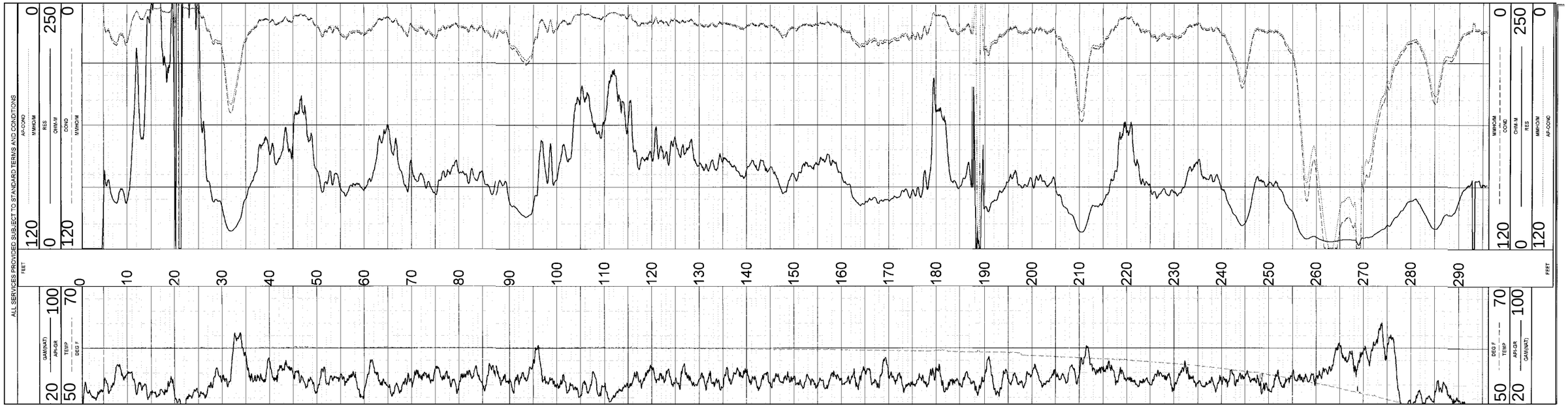
SLC5Q232.ppt

KLEINFELDER
PARSONS
Date:09/23/2005
Project Number 48743.1B

TEAD Phase II RFI

WELL C-44
NATURAL GAMMA AND
INDUCTION ELECTRICAL LOGS

PLATE
C-2a



SLC5Q094.ppt

KLEINFELDER
PARSONS

Date: 03/24/2005
Project Number 48743.1B

TEAD Phase II RFI

WELL C-44
NATURAL GAMMA AND INDUCTION LOGS

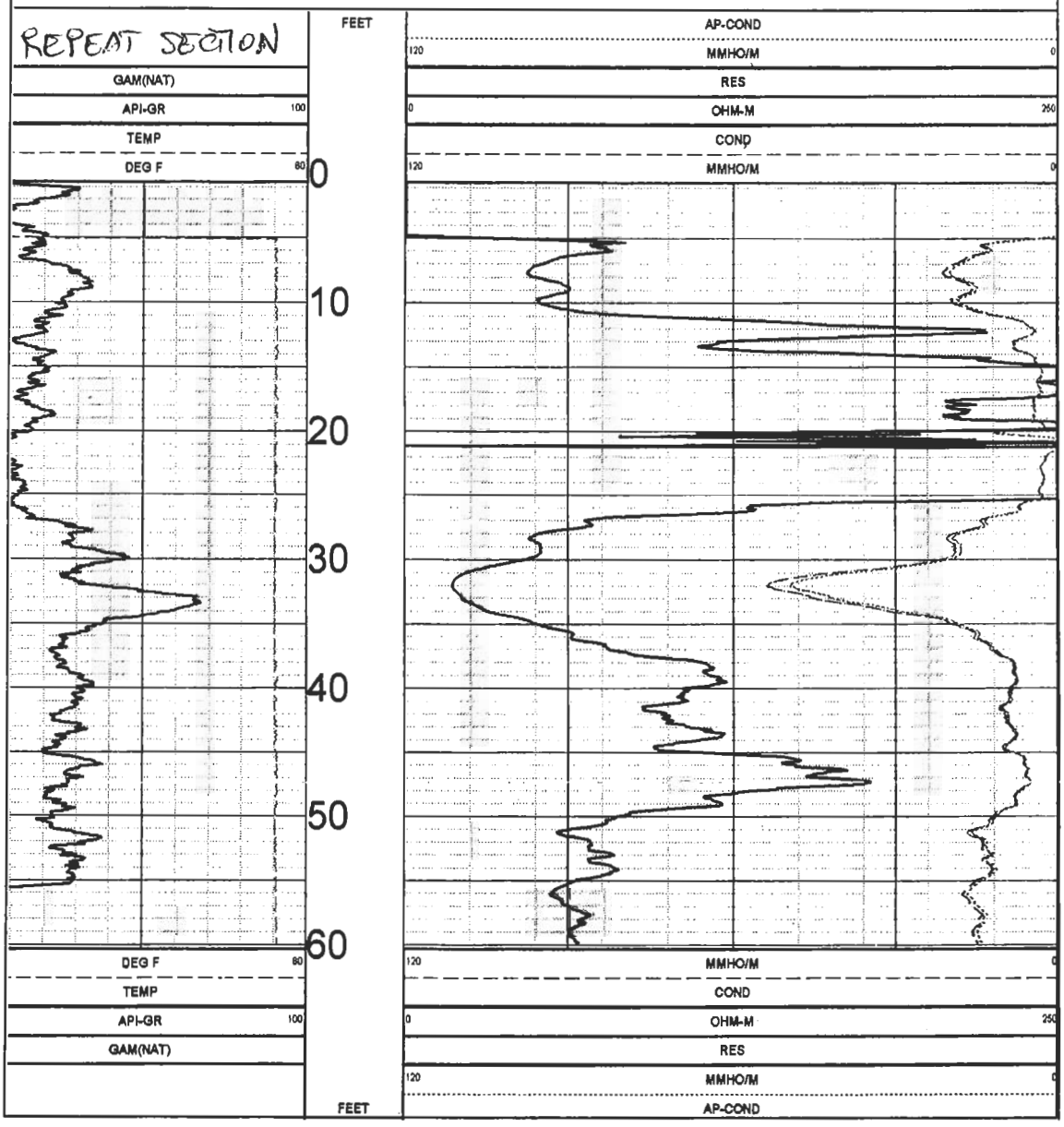
PLATE

C-2b

TOOL CALIBRATION C-44 12/08/04 09:51
TOOL 9512A
SERIAL NUMBER 993

REPEAT SECTION

	DATE	TIME	SENSOR	STANDARD	RESPONSE
1	Jul16,04	01:01:14	GAM(NAT)	Default [API-GR]	Default [CPS]
	Jul16,04	00:01:14	GAM(NAT)	Default [API-GR]	Default [CPS]
2	Dec07,04	18:08:32	AP-COND	0.000 [MMHO/M]	26000.00 [CPS]
	Dec07,04	18:08:32	AP-COND	705.000 [MMHO/M]	82628.00 [CPS]
3	Jul16,04	00:01:26	TEMP	36.400 [DEG F]	27697.00 [CPS]
	Jul16,04	00:01:26	TEMP	138.500 [DEG F]	33419.00 [CPS]
4	Dec21,99	17:30:50	A	0.414 [ ]	
5	Dec21,99	17:30:50	B	Default [ ]	



311 Rock Avenue • Golden, CO 80401
PH 303.526.4432 • FAX 303.526.4426
email: PedlerRAS@aol.com • www.rasinc.or

Integrated Subsurface Evaluation

C-44

COMPANY	: US AEC			OTHER SERVICES:	
WELL	: C-44				
LOCATION/FIELD	: TEAD				
COUNTY	: TOOELE				
STATE	: UTAH				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/08/04	PERMANENT DATUM	: GS		
DEPTH DRILLER	:			KB	: NA
LOG BOTTOM	: 296.10	LOG MEASURED FROM:	GS	DF	:
LOG TOP	: 0.50	DRL MEASURED FROM:	NA	GL	: na
CASING DIAMETER	: 0	LOGGING UNIT	: 202		
CASING TYPE	: PVC	FIELD OFFICE	:		
CASING THICKNESS:	0	RECORDED BY	: whp		
BIT SIZE	: 6	BOREHOLE FLUID	: 0	FILE	: PROCESSED
MAGNETIC DECL.	: 0	RM	: 0	TYPE	: 9512A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 140		
				THRESH:	4000

BOREHOLE GEOLOGY FROM GEOLOGIC BORING LOG BY MATTHEWS.

ZONES LABELED "CEMENT" REPRESENT CALCITE (CARBONATE) CEMENTATION.

SLC5Q232.ppt

KLEINFELDER
PARSONS
Date:09/23/2005
Project Number 48743.1B

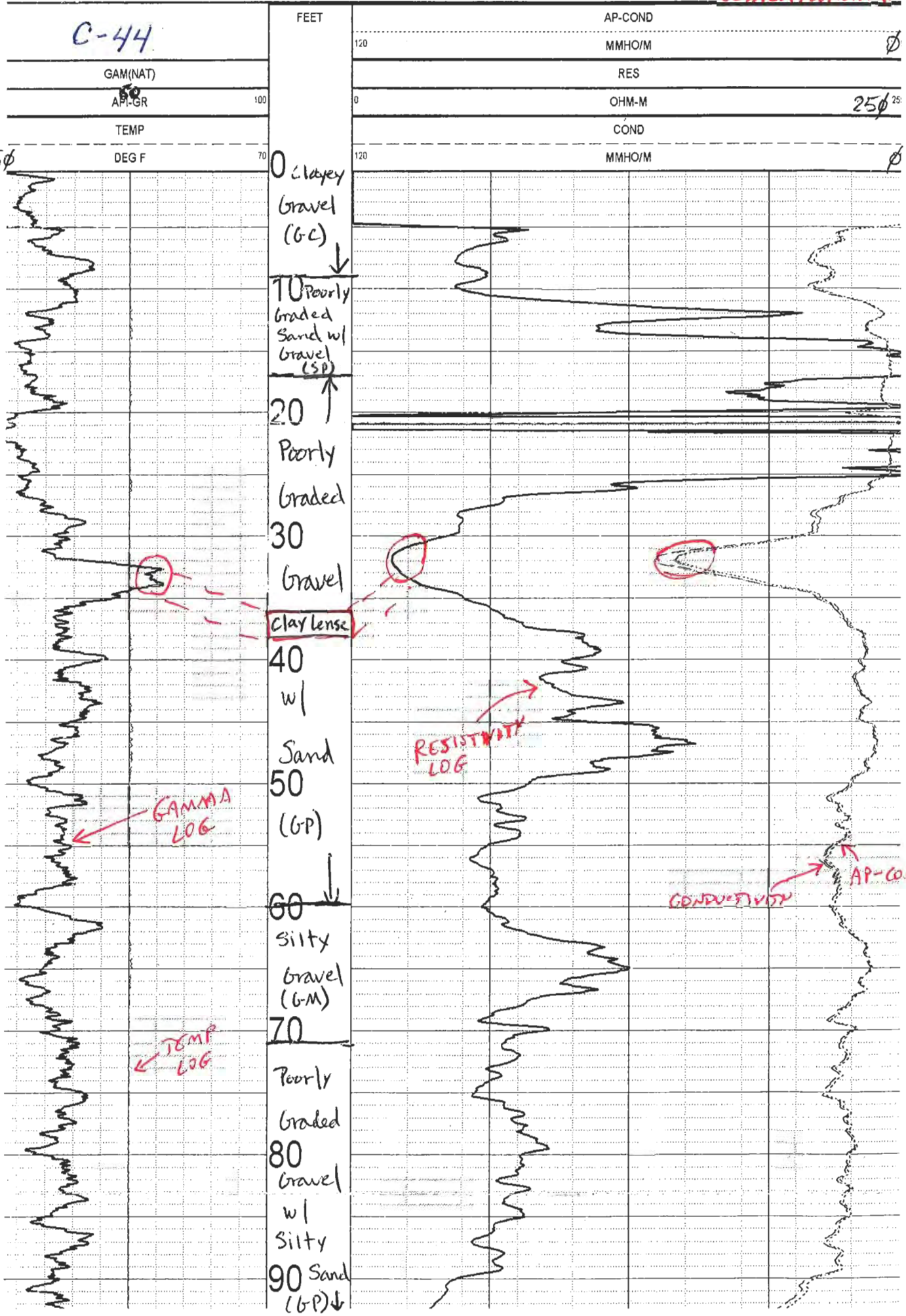
TEAD Phase II RFI

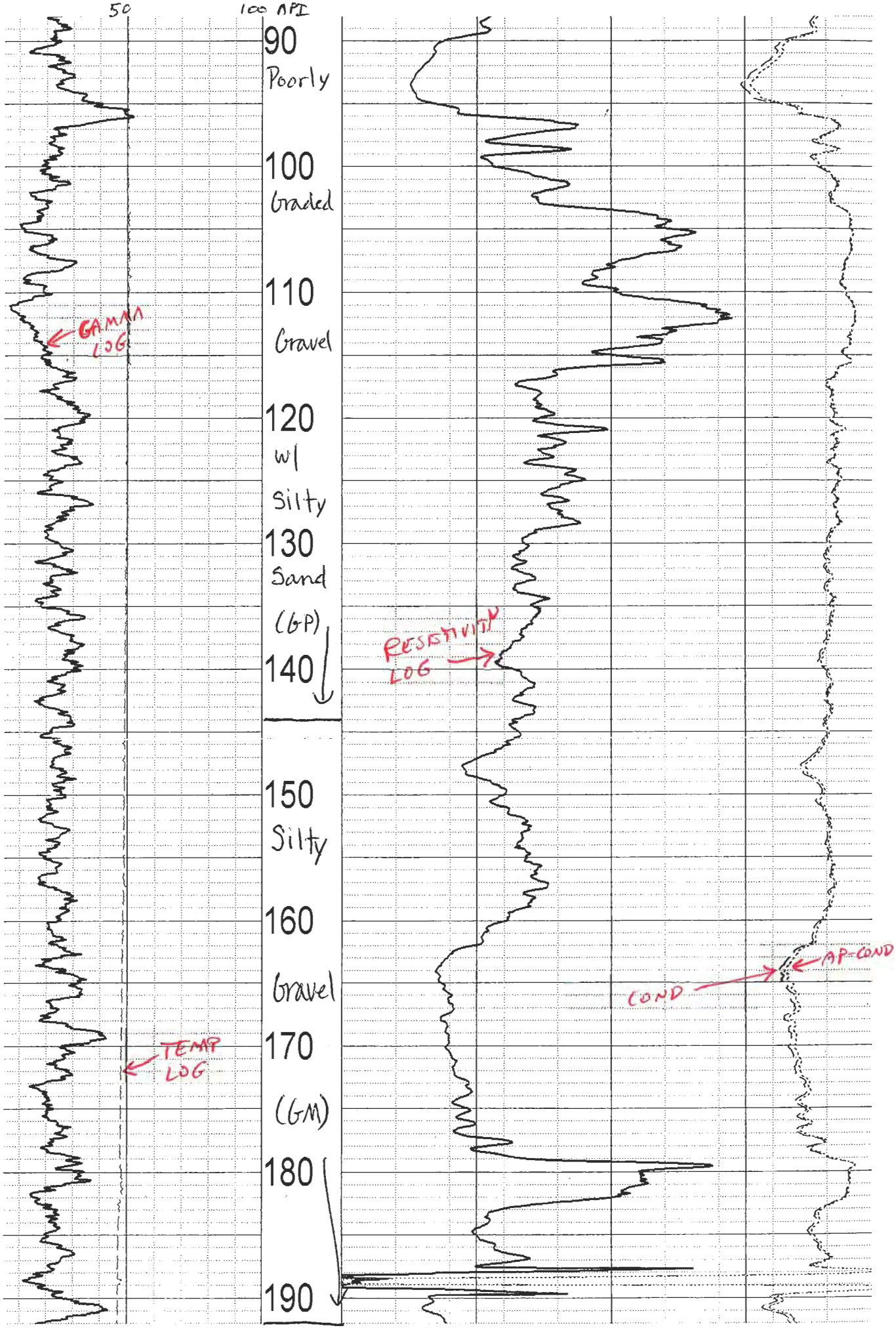
WELL C-44
NATURAL GAMMA AND
INDUCTION ELECTRICAL LOGS

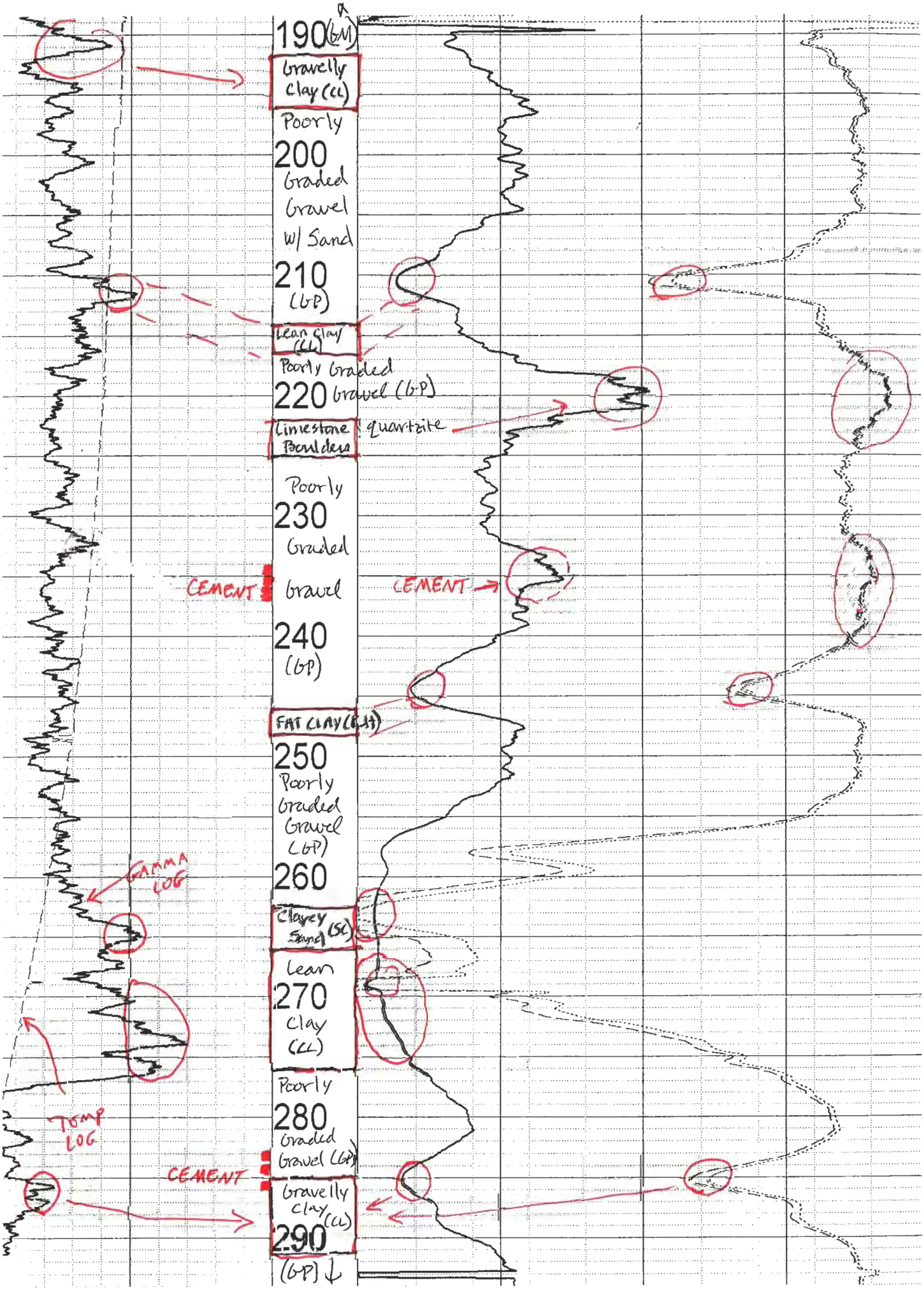
PLATE
C-2a

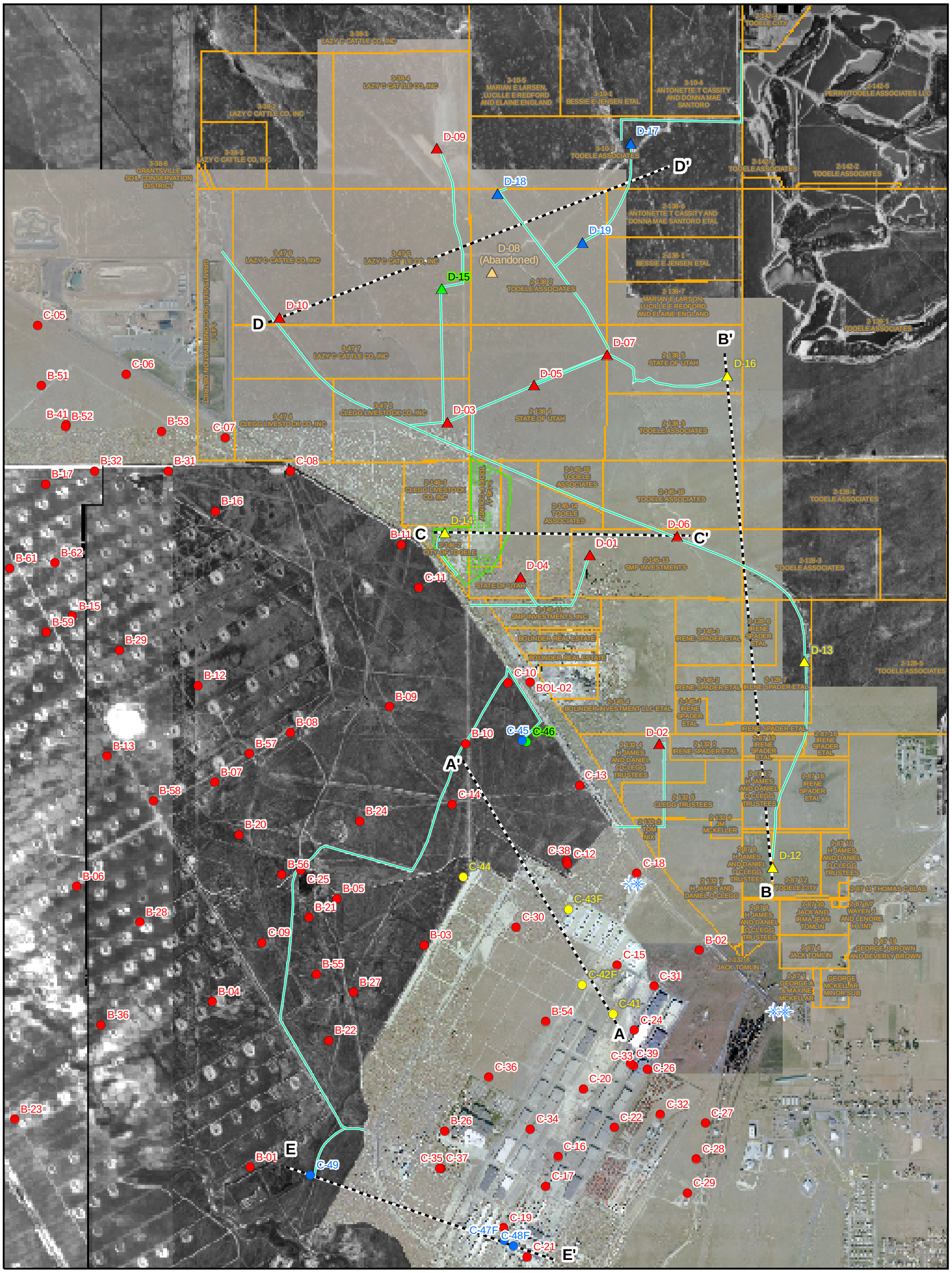
* zones labeled with "CEMENT" represent zones with carbonate cementation. *

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS




8
50
100 API
90
Poorly
100
Graded
110
Gravel
120
w/
Silty
130
Sand
(GP)
140
150
Silty
160
Gravel
170
(GM)
180
190
GAMMA LOG
RESISTIVITY LOG
AP-COND
COND
TEMP LOG


190 (bM)
Gravelly Clay (CL)
Poorly
200
Graded
Gravel
w/ Sand
210
(GP)
Lean Clay (CL)
Poorly Graded
220 gravel (GP)
Limestone Boulders
quartzite
Poorly
230
Graded
CEMENT
gravel
CEMENT
240
(GP)
FAT CLAY (CH)
250
Poorly
Graded
Gravel
(GP)
260
GAMMA LOG
Clayey Sand (SC)
Lean
270
Clay
(CL)
Poorly
280
Graded
Gravel (GP)
TEMP LOG
CEMENT
Gravelly Clay (CL)
290
(GP)



LEGEND

Offsite Groundwater Monitoring Wells
- Phase I RFI Well
- Phase I RFI Well - Abandoned
- Phase II RFI - Installed Fall-Winter 2004
- Phase III RFI - Installed Summer 2005
- Proposed Phase II RFI Well

TEAD/UID Groundwater Monitoring Wells
- Existing Well
- Phase II RFI Well - Installed Fall-Winter 2004
- Phase II RFI Well - Installed Summer-Fall 2005
- Proposed Phase II RFI Well

- Survey Benchmark
- Approximate Phase II RFI Well Access Route
- Cross Section Line
- Former Landfill
- Parcel Boundaries / Owners

SWMU 58
PHASE II RFI
TOOELE ARMY DEPOT
TOOELE, UTAH

0 900 1,800
Feet

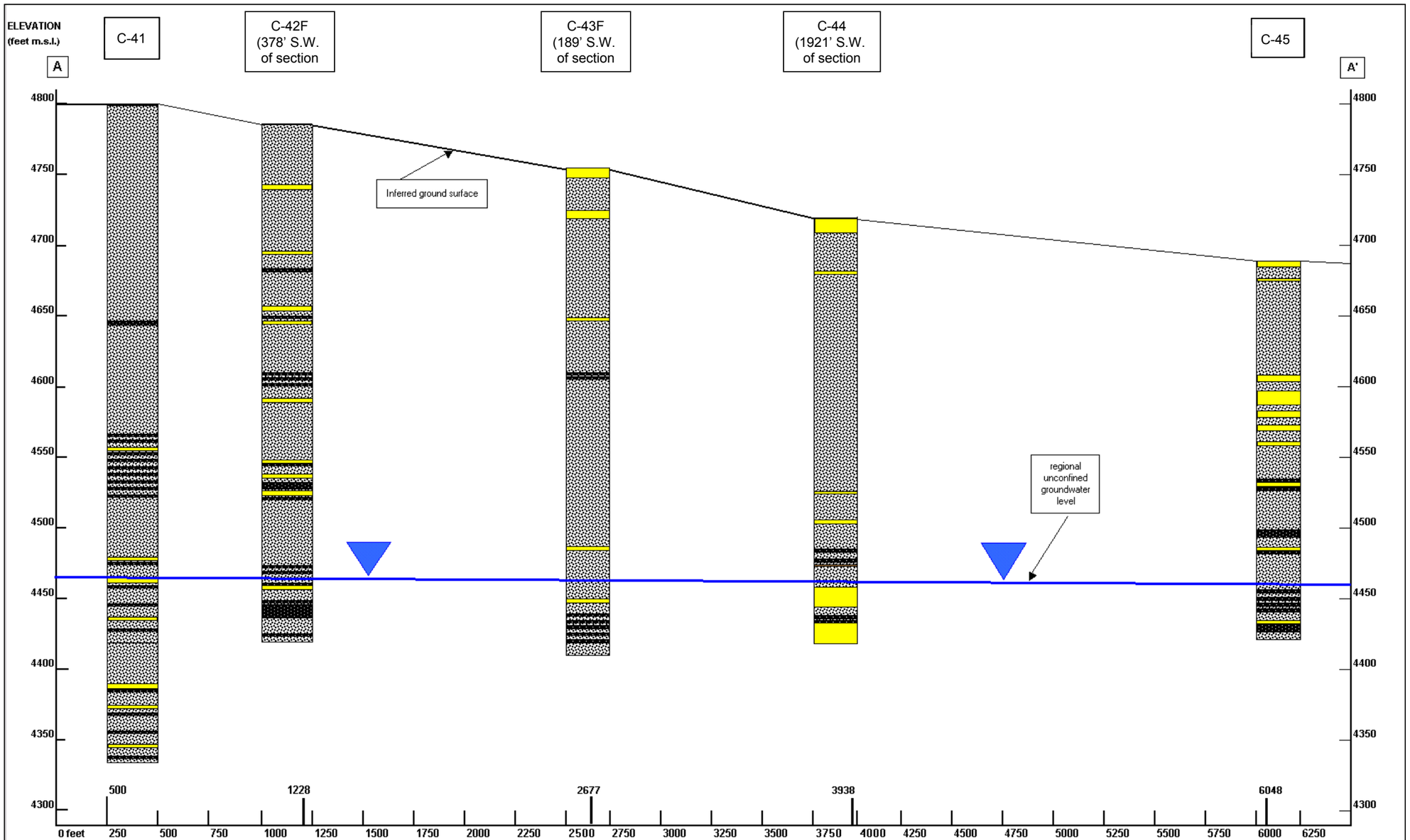
N

PLATE C-3

CROSS SECTION LOCATION DIAGRAM

w:\tooele\maps\well_comp_report_sept2005\cross_section_locations.mxd 01/09/06

PARSONS



VERTICAL EXAGGERATION 6.5X

GROUNDWATER ELEVATIONS TAKEN NOV/04 THRU AUG/05

coarse grained sediments		Poorly graded sand and gravels (SP & GP) Silty sand and gravels (GM & SM)
fine grained sediment		Clayey sands and gravels (SC & GC) Lean clay with sand or gravel (CL) Fat clays (CH) and silts (ML)
cemented sediments		Chemically precipitated carbonate cementation of the sediment interstices

KLEINFELDER
PARSONS
Date: 09/30/2005
Project Number 48743.1B

TEAD Phase II RFI @ SWMU 58

HYDROSTRATIGRAPHIC CROSS SECTION A - A'

SLC5Q044.ppt

PLATE

C-4

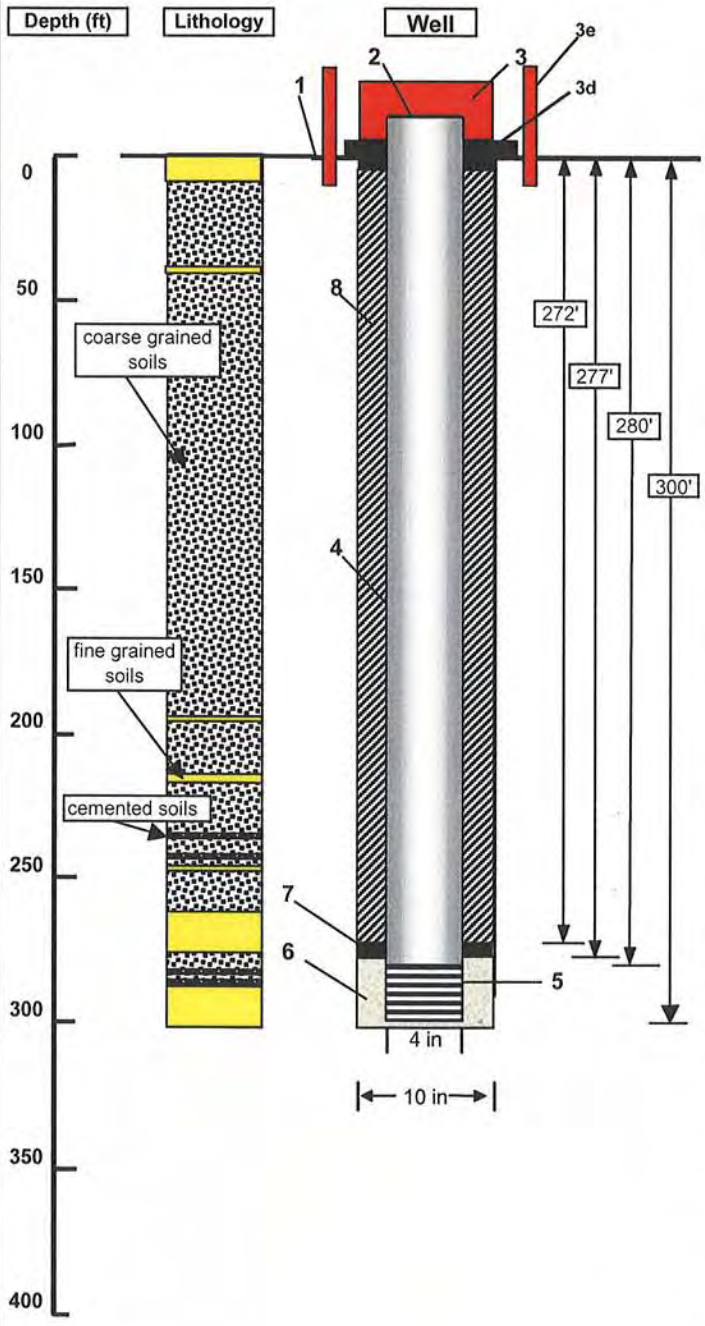
APPENDIX D

CONTRACTOR	WELL NUMBER	PLATE
Kleinfelder/Parsons	C - 44	D-1

TEAD Phase II RFI - SWMU 58

MONITORING WELL INSTALLATION DATA RECORD

PROJECT :	Phase II RFI - SWMU 58	LOCATION :	Tooele County, Utah
DRILLING SUBCONTRACTOR :	Layne Geoconstruction	DRILLER:	Tom Kearn
DRILLING METHOD AND EQUIPMENT:	Becker Hammer-Drill Systems AP1000	HELPERS:	Nate Salazar, Dave Kyle
WATER LEVEL : 259.63 ft (TOC) on 12/2/04	START: 11/17/04 END: 11/22/04	GEOLOGIST:	Matt Ivers



DRAWING NOT TO SCALE

1- Ground elevation at well : 4719.82 feet

2- Measuring point elevation : 4722.81 feet (top of well casing)

3- Surface completion casing :
- a) type / diameter (ID/ OD) : Steel - 10 inch ID / 10 3/8 inch OD
- b) height above ground : 3 feet
- c) length below ground : 3 feet
- d) type / quantity of sealant : Portland cement / 14 - 92.6 lb bags
- e) protective bollards : 4 - 4 inch steel concrete filled (4' ags - 2' bgs)

4- Well casing :
- a) type / diameter (ID/ OD) : Schedule 40 PVC / 4 inch
- b) height above ground : 2.99 feet
- c) length below ground : 300 feet
- d) type / quantity of sealant : see # 8
- e) well centralizers : none

5- Well screen :
- a) type / diameter (ID/ OD) : Schedule 40 PVC / 4 inch
- b) slot size : .010 inch
- c) lengths : 2 - 10 foot sections (280 to 300 feet bgs)

6- Well screen filter pack :
- a) type : #16 / 40 Colorado Silica Sand
- b) quantity used : 20 - 50 lb bags
- c) method of placement : poured from surface
- d) length : 277.3 to 300 feet bgs

7- Bentonite seal :
- a) type/quantity : Cetco coated pellets / 2 - 5 gallon buckets
- b) length : 271.9 to 277.3 feet bgs

8- Grout :
- a) grout mix used per batch : 28 gal water to 2 - 50 lb bags bentonite grout
- b) method of placement : pumped from surface
- c) qty of well casing grout : 72 bags (approx 1008 gallons)

Well development :
- a) method : bail and swab / pump and back-flush
- b) time : 2 hour 33 minutes / 2 hours 54 minutes
- c) gallons : 105 / 1008

Pumping tests :
- a) drawdown / time : 0.12 feet / 20 minutes
- b) pumping rate : 7 gpm

Summary of Well Survey Data
TEAD Phase II RFI Groundwater Monitoring Wells

Well No.	Elevations (ft above MSL) Measuring Point	Brass Cap	Ground Surface	Top of Well Screen	Bottom of Well Screen	Coordinates for Measuring Point (ft) Northing	Easting	Section	Range	Township	PVC Riser Stickup (ft)
C-41	**4804.70**	**4802.32**	**4801.67**	**4445.68**	**4425.68**	**7364933.324**	**1406930.413**	**30**	**R 4 W**	**T 3 S**	**3.03**
C-42F	**4785.09**	**4785.52**	**4785.27**	**4445.27**	**4425.27**	**7365504.752**	**1406335.618**	**19**	**R 4 W**	**T 3 S**	**-0.18**
C-43F	**4754.87**	**4755.23**	**4755.21**	**4436.21**	**4416.21**	**7366968.52**	**1406061.58**	**19**	**R 4 W**	**T 3 S**	**-0.34**
C-44	**4722.81**	**4720.44**	**4719.82**	**4439.82**	**4419.82**	**7367591.88**	**1404021.61**	**24**	**R 5 W**	**T 3 S**	**2.99**
C-45	**4689.99**	**4687.78**	**4687.20**	**4438.20**	**4418.20**	**7370229.15**	**1405164.18**	**19**	**R 4 W**	**T 3 S**	**2.79**
C-47F	**4824.53**	**4825.08**	**4825.03**	**4476.08**	**4446.08**	**7360556.94**	**1404815.63**	**30**	**R 4 W**	**T 3 S**	**-0.50**
C-48F	**4823.67**	**4824.08**	**4824.03**	**4475.08**	**4445.08**	**7360431.77**	**1404989.18**	**30**	**R 4 W**	**T 3 S**	**-0.36**
C-49	**4710.02**	**4707.49**	**4706.90**	**4447.49**	**4427.49**	**7361802.01**	**1401065.35**	**25**	**R 5 W**	**T 3 S**	**3.12**
D-12	**4803.05**	**4800.56**	**4800.25**	**4455.25**	**4435.25**	**7367777.995**	**1410018.176**	**20**	**R 4 W**	**T 3 S**	**2.80**
D-13	**4720.05**	**4717.40**	**4717.32**	**4355.32**	**4335.32**	**7371760.079**	**1410629.706**	**17**	**R 4 W**	**T 3 S**	**2.73**
D-14	**4592.80**	**4590.93**	**4590.39**	**4335.39**	**4315.39**	**7374264.49**	**1403669.88**	**13**	**R 5 W**	**T 3 S**	**2.41**
D-16	**4580.11**	**4577.75**	**4577.20**	**4346.20**	**4326.20**	**7377300.289**	**1409139.940**	**7**	**R 4 W**	**T 3 S**	**2.91**
D-17	**4476.25**	**4473.81**	**4473.24**	**4343.24**	**4323.24**	**7381795.49**	**1407265.97**	**6**	**R 4 W**	**T 3 S**	**3.01**
D-18	**4476.07**	**4473.89**	**4473.20**	**4318.20** **4293.20**	**4298.20** **4268.20**	**7380823.93**	**1404691.14**	**7**	**R 4 W**	**T 3 S**	**2.87**
D-19	**4497.75**	**4495.75**	**4494.99**	**4346.99**	**4326.99**	**7379876.47**	**1406330.96**	**7**	**R 4 W**	**T 3 S**	**2.76**

MSL: mean sea level
F for selected well identifiers designates flush-mount surface completion.
Coordinates for measuring point are US State plane 1983, Utah Central 4302, NAD 1983 (CONUS), GEO1D96 (continental US)
All survey data generated by Ward Engineering of Salt Lake City, Utah

Note that well D-18 has two screened intervals.

APPENDIX E

VEOLIA Water

TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA

Well ID: C-44	Initial Depth to Water: 259.63
Sample ID:	Total Depth of Well: 300.81
Duplicate ID:	Well Diameter: 4"
Sample Depth:	(a) 1 Casing Volume:
Date: 12/2/04	(b) 1 Filter Pack Water Volume:
Sampled By: JM	(a)+(b)x 3= Minimum Volume to Purge:
Method of ~~Sampling~~: Development 4" Bailer	Method of ~~Purging~~: Development 4" Bailer

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
0959	1st	Bailer	3 *	34.4	7.33	1848	71000					Tan fine
1026	10th	Bailer	30	32.3	7.37	1750	71000					light Tan fine
1107	20th	Bailer	60	33.7	7.47	1784	71000					light Tan fine
1115	Surg	ing we	ll w/	surge	Block							
1200	30th	Bailer	90	53.2	7.43	2130	71000					light Tan fine
1204	Surgi	ng well	w/Surg	e Block								
1232	35th	Bailer	105	60.3	7.43	1770	71000					light Tan none
2:33												

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution	990	Standard	5.39
Instrument reading		7.0 0921	10.0 0924	Instrument reading	990 0930	Instrument reading	5.39 0925

Notes: * Bailer Holds 3 gal

VEOLIA Water

TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA

Well ID: C-44	Initial Depth to Water: 259.63
Sample ID:	Total Depth of Well: 300.81
Duplicate ID:	Well Diameter: 4"
Sample Depth:	(a) 1 Casing Volume: 27 gal
Date: 12/2/04	(b) 1 Filter Pack Water Volume:
Sampled By: JN	(a) + (b) x 3 = Minimum Volume to Purge: 81 gal
Method of ~~Sampling~~: Development 4" Submersible	Method of ~~Purging~~: Development 4" Submersible

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
1403	297	7.01	0									
1415	297	7.14	84	57.8	7.40	1654	141					Cloudy none
1427	297	7.01	168	52.3	7.39	1562	45.4					Cloudy none
1439	297	7.14	252	51.5	7.33	1552	26.1					Clear none
1451	297	7.14	336	52.5	7.36	1575	17.7					Clear none
1452	Pump	off	Backflushed		5x							
1507	Parameters after Backflush			52.3	7.39	1578	235					Cloudy none
1519	297	7.01	420	51.0	7.36	1547	35.1					Clear none
1531	297	7.14	504	51.3	7.32	1555	10.5					Clear none
1543	297	7.14	588	50.2	7.34	1512	5.32					Clear none
1:40												

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution		Standard	
Instrument reading				Instrument reading		Instrument reading	

Notes: 12

VEOLIA Water

TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA

Well ID: C-44	Initial Depth to Water: 259.63
Sample ID:	Total Depth of Well: 300.81
Duplicate ID:	Well Diameter: 4"
Sample Depth:	(a) 1 Casing Volume: 27 gal
Date: 12/3/04	(b) 1 Filter Pack Water Volume:
Sampled By: [illegible]	(a)+(b)x 3= Minimum Volume to Purge: 81 gal
Method of ~~Sampling:~~ Development 4" Submersible	Method of ~~Purging:~~ Development 4" Submersible

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
0854	297	7.14	588									
0906	297	7.01	672	48.8	7.34	1544	4.56					clear none
0907	Pump	off	Backflushed		well	5x						
0920	Parameters after	Backflush		49.5	7.43	1539	112					cloudy none
0932	297	7.14	756	38.0	7.32	1460	7.15					clear none
0944	297	7.01	840	43.8	7.32	1463	3.59					clear none
0956	297	7.14	924	44.2	7.37	1481	1.81					clear none
008	297	7.14	1,008	44.0	7.34	1496	1.47					clear none
1:14												

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution	990	Standard	5.39
Instrument reading		7.0 0839	10.0 0842	Instrument reading	990 0844	Instrument reading	5.39 0845

Notes: 12 84

Thursday December 2, 2004
Weather: Clear, cool ~30°
Wind: Cold from South

0800	Arrive at OG-6 and met w/ Jeff (Parsons)
0812	Arrive at C-44, Layne Cleaning up well site
0841	Starting Set up SWL 259.63' TD 300.81'
0919	Calibrated Equipment
0959	1st Bailer removed, Parameters Taken
1026	10th Bailer removed, Parameters Taken
1107	20th Bailer removed, Parameters Taken
1115	Surging well w/ Surge Block
1200	30th Bailer Removed, Parameters ~~Staff~~ Taken
1204	Surging well w/ Surge Block
1232	35 Bailer Removed, Parameters Taken
1242	Setting up for purge
1305	Lowering pump and piping
1400	Pump on, establishing flow
1403	Flow established at 7 gpm. Intake 297
1452	Pump off, Backflushed well 5+
1543	Pump off for Today, will resume pumping Tomorrow, Jeff w/ Parsons completing recovery Portion of pumping Test
1546	Cleaning up well site and deconing equipment
1625	Leaving C-44 → 90 day yard
1636	Arrive at 90 day yard offloading ~700 gal of Purge water

Friday December 3, 2004
Weather: Clear, Cold ~ 30°
Wind: Cold from South

0821 Arrive at C-44 and Start Set up, Continuing from yesterday
0852 Pump on, establishing flow
0854 Flow established at 7 gpm
LE 0838 Calibrated Equipment
0907 Pump off, Backflushed well 5x
1008 Pump off. Parameters Stable, Turbidity < 5 NTU's
1015 Removing pump and piping
1128 Thawed Pressure washer and water tank & outlet hose, Deconing equipment
1259 Leaving C-44 → 90 day yard
1308 Arrive at 90 day yard offloading ~ 500 gal of purge water.

Owner TEAD Phase II Address C-44 County Tooele State UT

Date 12-2-04 Company performing test Parsons Measured by Jeff Bigelow

No. C-44 Distance from pumping well _____ Type of test pump Test No. 1

Measuring equipment Solinst W.L. meter

Time Data
Pump on: Date 12-2-04 Time 14:03 (t)
Pump off: Date 12-2-04 Time _____ (t')
Duration of aquifer test:
Pumping 20 min Recovery 20 m

Water Level Data
Static water level 259.70
Measuring point Ground surface
Elevation of measuring point _____

Discharge Data
How Q measured _____
Depth of pump/air line _____
Previous pumping? Yes ____ No ____
Duration _____ End _____

Date	Clock time	Time since pump started t	Time since pump stopped t'	t/t'		Water level measurement	Correction or Conversion	Water level	Water level change s or s'		Discharge measurement	Rate		Comments on factors affecting test data
12-2-04	14:03	0				259.70						7.5-8.0	gpm	
	14:04	1				259.86						7.5-8.0	gpm	
	14:05	2				259.90						7.5-8.0	gpm	
	14:08	5				259.82						7.5-8.0	gpm	
	14:13	10				259.82						7.0-7.25	gpm	
	14:18	15				259.80						7.0-7.25	gpm	
	14:23	20				259.80						7.0-7.25	gpm	
12-2-04	15:44		0			259.70								Water re-entering well from pump-tube
	15:45		1			259.55								
	15:46		2			259.60								
	15:49		5			259.60								
	15:54		10			259.60								
	15:59		15			259.60								
	16:04		20			259.60								

APPENDIX F

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Monday December 20, 2004
Weather: Fog, Cold ~30°
Wind: None

1023 Arrive at C-44 and installing 3 samplers at 283', 293' and 303'. SWL 262.08'
1057 Leaving C-44 → C-43
1108 Arrive at C-43 and installing 3 samplers at 319', 329' and 339'. SWL 293.59'
1128 Leaving C-43 → C-42.
1141 Arrive at C-42 and installing 4 samplers at 340', (2) 350' (ms/msd) and 360'. SWL 318.92'
1208 Leaving C-42 → C-41
Arrive at C-41 and installing 4 samplers
1214 at (2) 358' (Duplicates), 368 and 378'. SWL 337.86'

Monday January 3, 2005
Weather: Cloudy, cool ~40°
Wind: None

0902 Arrive at C-41 and preparing to Sample
0928 Removing Samplers
12 VOA's Taken, 40 mL w/HCL
0934 (3) C-41GW001 (358')
(1000) (3) C-41FD001 (358')
0946 (3) C-41GW002 (368')
0952 (3) C-41GW003 (378')
1005 Leaving C-41 → C-42
1008 Arrive at C-42 and preparing to Sample
1033 Removing Samplers
15 VOA's Taken, 40mL w/HCL
1036 (3) C-42F-GW001 (340')
1042 (3) C-42F-GW002 (350')
1042 (3) C-42F-GWMS002 (350')
1042 (3) C-42F-SD002 (350')
1052 (3) C-42F-GW003 (360')
1109 Leaving ~~C-42~~ C-42F → C-43F
1112 Arrive at C-43F and preparing to Sample
1132 Removing Samplers
11 VOA's Taken, 40 mL w/HCL
1137 (3) C-43FGW001 (319')
1137 (2) C-43FFR001 (319')
1144 (3) C-43FGW002 (329')
1150 (3) C-43FGW003 (339')
1209 Leaving C-43F → C-44
1220 Arrive at C-44 and preparing to Sample
1234 Removing Samplers
~~3~~ 9 VOA's Taken, 40 mL w/HCL
1238 (3) C-44GW001 (283')
1243 (3) C-44GW002 (293')

62

Cont 1/3/05

1248 (3) C-44GW003 (303')

1258 Leaving C-44 → Parson's field office

1311 Arrive at Field office, delivered samples spoke w/Jeff Bigelow and confirmed receipt of Samples.

ANALYTICAL QUALITY CONTROL SUMMARY

Samples were collected in accordance with the analytical and quality control specifications of the Final Phase II RCRA Facility Investigation SWMU-58 Work Plan (Parsons, 2003) and the Tooele Industrial Area Project CDQMP and QAPP. Passive diffusion bag samplers were deployed in wells C-43F and C-44 on December 20, 2004. Samples including field quality control samples were collected on January 3, 2005 and submitted to Analytical Services Center, a Utah and USACE-certified analytical laboratory.

Results were received and submitted to third party data review by Synectics. Data review included checks of the following data quality elements: Holding times, continuing calibration verification, method blanks, field blanks, laboratory control sample recovery, matrix spike and matrix spike duplicate recovery and precision, surrogate recovery, and field duplicate precision. No out of control events warranting qualification of the data were observed for this well. Analytical and data validation reports are attached.

analytical services center
International Specialists in Environmental Analysis
4493 Walden Avenue, Lancaster, New York 14086
Tel: 716/685-8080, 800/327-6534 • Fax: 716/685-0852 • Email: asc@ene.com

January 14, 2005

Jan Barbas
Parsons Engineering Science, Inc.
406 W. South Jordan Pkwy.
Suite 300
South Jordan, Utah 840953944

RE: Tooele RCRA Phase II
Work Order No.: **0501021**

Dear Jan Barbas,

Analytical Services Center received 14 samples on Tuesday, January 04, 2005 for the analyses presented in the following report.

The ASC certifies that the test results in this report meet all requirements of NELAC for which it holds certification except as noted in this narrative and/or as flagged in the report.

The ASC is accredited in the Fields of Testing Potable water (SDWA), Solid and Chemical Materials (Solid Hazardous Wastes, RCRA), Water (CWA and other non-potable water) and Air and Emissions. Its primary accrediting authorities are New York State Department of Health and Florida Department of Health. The particular analytes/methods certified may be ascertained by requesting the laboratory's current certificates from your laboratory Project Manager .

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

This report is not to be reproduced, except in full, without the written approval of the laboratory.

Sincerely,

Tony Bogolin
Project Manager
CC:
Enclosures as noted

This report ends on page 340

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ecology and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Lab Order: 0501021
Date Received: 1/4/2005

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Alt. Client Id	Collection Date
0501021-01A	PARSTB1		1/3/2005 7:55:00 AM
0501021-02A	C-41GW001		1/3/2005 9:34:00 AM
0501021-03A	C-41FD001		1/3/2005 10:00:00 AM
0501021-04A	C-41GW002		1/3/2005 9:46:00 AM
0501021-05A	C-41GW003		1/3/2005 9:52:00 AM
0501021-06A	C-42GW001		1/3/2005 10:36:00 AM
0501021-07A	C-42GW002		1/3/2005 10:42:00 AM
0501021-08A	C-42GW003		1/3/2005 10:52:00 AM
0501021-09A	C-43GW001		1/3/2005 11:37:00 AM
0501021-10A	C-43GW002		1/3/2005 11:44:00 AM
0501021-11A	C-43GW003		1/3/2005 11:50:00 AM
0501021-12A	C-44GW001		1/3/2005 12:38:00 PM
0501021-13A	C-44GW002		1/3/2005 12:43:00 PM
0501021-14A	C-44GW003		1/3/2005 12:48:00 PM

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: PARSONS ENGINEERING SCIENCE, INC.
Project: Tooele RCRA Phase II
Lab Order: 0501021

CASE NARRATIVE

GCMS VOLATILES
A DB 624 column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

Sample Analysis
All aqueous volatile samples were determined to be at a pH of 1.

All samples were analyzed within hold time.

Samples C-42GW001, C-42GW002, C-42GW003, C-43GW001, C-43GW002 and C-43GW003 were analzyed at secondary dilutions due to the elevated level of trichloroethene present. The diluted sample results have been reported with the original undiluted analysis. Raw data has been included for each analysis.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

There were no manual integrations required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

Tony Bogolin
Project Manager
January 14, 2005

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Lab Order: 0501021
Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II

DATES SUMMARY REPORT

(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-03A	C-41FD001	Water	Low Level VOCs by Method 8260B	1/3/2005 10:00:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:00:00 AM	1/6/2005 1:55:00 AM	1089548	SAMP	1	21	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-02A	C-41GW001	Water	Low Level VOCs by Method 8260B	1/3/2005 9:34:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 9:34:00 AM	1/6/2005 1:23:00 AM	1089547	SAMP	1	21	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-04A	C-41GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 9:46:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 9:46:00 AM	1/6/2005 2:27:00 AM	1089549	SAMP	1	21	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-05A	C-41GW003	Water	Low Level VOCs by Method 8260B	1/3/2005 9:52:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 9:52:00 AM	1/6/2005 2:59:00 AM	1089550	SAMP	1	21	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-06A	C-42GW001	Water	Low Level VOCs by Method 8260B	1/3/2005 10:36:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:36:00 AM	1/6/2005 3:30:00 AM	1089551	SAMP	1	20	
			Low Level VOCs by Method 8260B			14:C 1/17/2005 10:36:00 AM	1/7/2005 1:20:00 PM	1090698	SAMP	25	1	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-07A	C-42GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 10:42:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:42:00 AM	1/6/2005 4:34:00 AM	1089553	SAMP	1	20	
			Low Level VOCs by Method 8260B			14:C 1/17/2005 10:42:00 AM	1/7/2005 1:52:00 PM	1090699	SAMP	25	1	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-08A	C-42GW003	Water	Low Level VOCs by Method 8260B	1/3/2005 10:52:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 10:52:00 AM	1/7/2005 3:58:00 PM	1090702	SAMP	25	1	
			Low Level VOCs by Method 8260B			14:C 1/17/2005 10:52:00 AM	1/6/2005 4:02:00 AM	1089552	SAMP	1	20	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-09A	C-43GW001	Water	Low Level VOCs by Method 8260B	1/3/2005 11:37:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:37:00 AM	1/10/2005 4:29:00 PM	1089962	SAMP	4	1	
			Low Level VOCs by Method 8260B			14:C 1/17/2005 11:37:00 AM	1/7/2005 4:30:00 PM	1090703	SAMP	1	20	
(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID		Type	DF	#Analytes	Fl
0501021-10A	C-43GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 11:44:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:44:00 AM	1/7/2005 5:02:00 PM	1090704	SAMP	1	20	

HT From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

** "Analyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date and time of completion of the preparation.*
For TCLP/SPLP Extractions and subsequent preparation tests..."Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects the extraction from the original sample leacheate unless an "RE" Sample exisits for the extraction (tumble) test.

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Lab Order: 0501021
Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II

DATES SUMMARY REPORT

(LAB) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
0501021-10A	C-43GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 11:44:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:44:00 AM	1/10/2005 5:01:00 PM 1089963	SAMP	4	1	
(LAB) Sample ID	**(CLIENT)**	**Matrix**	**Test Name**	**Collection Date**	**Received Date**	**HT (Days) / HT Expire**	**Analyzed* - Analysis/BatchID**	**Type**	**DF**	**#Analytes**	**Fl**
0501021-11A	C-43GW003	Water	Low Level VOCs by Method 8260B	1/3/2005 11:50:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 11:50:00 AM	1/7/2005 5:34:00 PM 1090705	SAMP	1	20	
			Low Level VOCs by Method 8260B			14:C 1/17/2005 11:50:00 AM	1/10/2005 5:32:00 PM 1089960	SAMP	4	1	
(LAB) Sample ID	**(CLIENT)**	**Matrix**	**Test Name**	**Collection Date**	**Received Date**	**HT (Days) / HT Expire**	**Analyzed* - Analysis/BatchID**	**Type**	**DF**	**#Analytes**	**Fl**
0501021-12A	C-44GW001	Water	Low Level VOCs by Method 8260B	1/3/2005 12:38:00 PM	1/4/2005 8:35:00 AM	14:C 1/17/2005 12:38:00 PM	1/7/2005 6:06:00 PM 1090696	SAMP	1	21	
(LAB) Sample ID	**(CLIENT)**	**Matrix**	**Test Name**	**Collection Date**	**Received Date**	**HT (Days) / HT Expire**	**Analyzed* - Analysis/BatchID**	**Type**	**DF**	**#Analytes**	**Fl**
0501021-13A	C-44GW002	Water	Low Level VOCs by Method 8260B	1/3/2005 12:43:00 PM	1/4/2005 8:35:00 AM	14:C 1/17/2005 12:43:00 PM	1/11/2005 9:55:00 AM 1090824	SAMP	1	21	
(LAB) Sample ID	**(CLIENT)**	**Matrix**	**Test Name**	**Collection Date**	**Received Date**	**HT (Days) / HT Expire**	**Analyzed* - Analysis/BatchID**	**Type**	**DF**	**#Analytes**	**Fl**
0501021-14A	C-44GW003	Water	Low Level VOCs by Method 8260B	1/3/2005 12:48:00 PM	1/4/2005 8:35:00 AM	14:C 1/17/2005 12:48:00 PM	1/11/2005 10:26:00 AM 1090822	SAMP	1	21	
(LAB) Sample ID	**(CLIENT)**	**Matrix**	**Test Name**	**Collection Date**	**Received Date**	**HT (Days) / HT Expire**	**Analyzed* - Analysis/BatchID**	**Type**	**DF**	**#Analytes**	**Fl**
0501021-01A	PARSTB1	Water	Low Level VOCs by Method 8260B	1/3/2005 7:55:00 AM	1/4/2005 8:35:00 AM	14:C 1/17/2005 7:55:00 AM	1/5/2005 11:16:00 PM 1089546	SAMP	1	21	

HT From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

** "Analyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date and time of completion of the preparation.*
For TCLP/SPLP Extractions and subsequent preparation tests..."Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects the extraction from the original sample leacheate unless an "RE" Sample exisits for the extraction (tumble) test.

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Laboratory Results

NYS ELAP ID#: 10486

Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Work Order: 0501021

Method References

GCMS Volatiles

Parsons, Tooele - VOCs, Low Level by GCMS Method 8260B

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. 3rd ed. 1986. Volumes.1A, 1B, 1C & Volume 2. (Includes all Updates). U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

SAMPLE RECEIPT RECORDS

CHAIN OF CUSTODY

PARSONS

COC ID: 840

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway	
Project Manager:	Ed Staes	**Installation:**	TEAD	Suite 300 South Jordan, Utah 84095	
Sample Coordinator:	Jeff Bigelow	**Sample Program:**	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069	

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	FIELDQC	PARSTB1	WQ	NA	TB	1	1/3/05	0755	JDH			3

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:
VOC	ECEN						

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
[signature]	1/3/05 13:17	[signature] 13:17 ICA	1/3/05 13:17
[signature]	1/3/05 15:30	TO FED EX	
		[signature]	1-4-05 / 0835

8

CHAIN OF CUSTODY

PARSONS

COC ID: 917

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
Project Manager:	Ed Staes	**Installation:**	TEAD	Suite 300 South Jordan, Utah 84095
Sample Coordinator:	Jeff Bigelow	**Sample Program:**	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End Depth	Total Cont.
C-44	C-44	C-44GW001	WG	DF	N	1	1/3/05	1238	JA	283'	283'	3

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
VOC	ECEN					

Remarks:

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
[signature]	1/3/05 1317	[signature]	1/3/05 1317
[signature]	1/3/05 TO FED EX 1530	[signature]	1-4-05 0835

CHAIN OF CUSTODY PARSONS COC ID: 918	Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
	Project Manager:	Ed Staes	Installation:	TEAD	Suite 300 South Jordan, Utah 84095
	Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End Depth	Total Conts.
C-44	C-44	C-44GW002	WG	DF	N	1	1/3/05	1243	JOT	293	293	3

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
VOC	ECEN					

Remarks:

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317		1/3/05 1317
	1/3/05 TO FED EX 1550		1-4-05 0835

CHAIN OF CUSTODY

PARSONS

COC ID: 919

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
Project Manager:	Ed Staes	**Installation:**	TEAD	Suite 300 South Jordan, Utah 84095
Sample Coordinator:	Jeff Bigelow	**Sample Program:**	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Cont.
C-44	C-44	C-44GW003	WG	DF	N	1	1/3/05	1248	JAT	303'	303'	3

Analysis	Lab	Cooler	No. Cont.	AB Lot	EB Lot	TB Lot
VOC	ECEN					

Remarks:

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	1/3/05 1317		1/3/05 1317
	1/3/05 1530 TO FED EX		1-4-05 0835

Cooler Receipt Form

No. of Packages:	1	**Date Received:**	1-4-05
Package Receipt No.:	15296	**Project or Site Name:**	
Client:	Parsons		

A. Peliminary Examination and Receipt Phase	Circle One		
1. Did coolers come with airbill or packing slip?	(Yes)	No	NA
Circle carrier here and print airbill number below: (FedEx) Airborne Client Other _____			
Shipped as high hazard or dangerous goods?	Yes	(No)	NA
2. Did cooler(s) have custody seals?	(Yes)	No	NA
3. Were custody seals unbroken and intact on receipt?	(Yes)	No	NA
4. Were custody seals dated and signed?	(Yes)	No	NA
5. How was package secured? Not secured (Fiberglass Tape) _____			

B. Unpacking Phase

6. Date cooler(s) opened: 1-4-05 Cooler(s) opened by: _____ (Signature)
7. Was a temperature blank vial included inside cooler(s)? (Yes) No NA

Please Record Temperature Vial or Cooler Temperature for Each Cooler, Range (2° - 6°C)*

Airbill No.	Temp. C	Airbill No.	Temp. C	Airbill No.	Temp. C
7903 8450 3906	3.5				

Thermometer No.: 231 Correction Factor: 0.0 *If temperature is outside of acceptable range, prepare a PM Notification form indicating affected containers.

8. Were the C-O-C forms received?	(Yes)	No	NA
C-O-C forms numbers if present:			
9. Was enough packing material used in cooler(s)?	Yes	No	NA
Type of material: ☐ Vermiculite ☒ Bubble Wrap ☐ Other _____			
10. If cooling was required, what was the means (type ice) of cooling used: ☒ Wet ☐ Dry ☐ Blue ☐ Other			NA
11. Were all containers sealed in separate plastic bags?	(Yes)	No	NA
12. Did all containers arrive unbroken and in good condition?	(Yes)	No	NA

13. Interim storage area if not logged: _____

In: Date _____ Time _____ Signature _____

Out: Date _____ Time _____ Signature _____

C. Login Phase

Samples Logged in By Signature: _____ Date: 1/4/05

14. Were all container labels complete (e.g. date, time preserved)?	(Yes)	No	NA
15. Were all C-O-C forms filled out properly in black ink and signed?	(Yes)	No	NA
16. Did the C-O-C form agree with containers received?	(Yes)	No	NA
17. Were the correct containers used for the tests requested?	(Yes)	No	NA
18. Were the correct preservatives listed on the sample labels?	(Yes)	No	NA
19. Was a sufficient sample volume sent for the tests requested?	(Yes)	No	NA
20. Were all volatile samples received without headspace?	(Yes)	No	NA

*Prepare a PM Notification form (F-051).

Groundwater Analytical Results

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc. **Client Sample ID:** PARSTB1
Lab Order: 0501021 **Alt. Client ID:**
Project: Tooele RCRA Phase II **Collection Date:** 1/3/2005 7:55:00 AM **% Moist:**
Lab ID: 0501021-01A **Sample Type:** SAMP **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/5/2005 11:16:00 PM	LINUS_050105E	GP
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	ND		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	ND		1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	ND		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	93		70 - 130	%REC	1	1/5/2005 11:16:00 PM	LINUS_050105E	GP
Surr:4-Bromofluorobenzene	96		70 - 130	%REC	1			
Surr:Toluene-d8	91		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to matrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.
Client Sample ID: C-44GW001
Lab Order: 0501021
Alt. Client ID:
Project: Tooele RCRA Phase II
Collection Date: 1/3/2005 12:38:00 PM **% Moist:**
Lab ID: 0501021-12A **Sample Type:** SAMP **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B **Method:** SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/7/2005 6:06:00 PM	LINUS_050107C	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	31.0		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.402	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	8.95		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	97		70 - 130	%REC	1	1/7/2005 6:06:00 PM	LINUS_050107C	DWW
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	91		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to matrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.
Lab Order: 0501021
Project: Tooele RCRA Phase II

Client Sample ID: C-44GW002
Alt. Client ID:
Collection Date: 1/3/2005 12:43:00 PM **% Moist:**

Lab ID: 0501021-13A **Sample Type:** SAMP **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/11/2005 9:55:00 AM	LINUS_050111B	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	29.5		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.377	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	8.22		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	96		70 - 130	%REC	1	1/11/2005 9:55:00 AM	LINUS_050111B	DWW
Surr:4-Bromofluorobenzene	98		70 - 130	%REC	1			
Surr:Toluene-d8	94		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to matrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.
Client Sample ID: C-44GW003
Lab Order: 0501021
Alt. Client ID:
Project: Tooele RCRA Phase II
Collection Date: 1/3/2005 12:48:00 PM **% Moist:**
Lab ID: 0501021-14A **Sample Type:** SAMP **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B **Method:** SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	1/11/2005 10:26:00 AM	LINUS_050111B	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	28.6		1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.387	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	ND		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	8.26		1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	95		70 - 130	%REC	1	1/11/2005 10:26:00 AM	LINUS_050111B	DWW
Surr:4-Bromofluorobenzene	97		70 - 130	%REC	1			
Surr:Toluene-d8	95		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to matrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

AUTOMATED DATA REVIEW SUMMARY

Facility:	SWMU 58
Event:	2004 10 SWMU 58 Vertical Profile Borings
Contract:	9T9H213C
Sample Delivery Group:	0501021
Field Contractor:	Parsons Engineering Science, Salt Lake City
Laboratory Contractor:	Ecology and Environment, Inc., Lancaster, NY
Data Review Contractor:	Synectics, Sacramento, CA
Guidance Document:	*Final Phase II RCRA Facility Investigation SWMU-58 Workplan, December 2003*

Analytical Method	Normal Samples	Field QC Samples
SW8260B	12	2

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistant with the requirements contained in Final Phase II RCRA Facility Investigation SWMU-58 Workplan, December 2003 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as "J/UJ", the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Parsons Engineering Science, Salt Lake City; analyses were performed by Ecology and Environment, Inc., Lancaster, NY and were reported under sample delivery group (SDG) 0501021. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative. The following quality control elements were evaluated during this review effort:

Technical Holding Times
Continuing Calibration Verification
Method Blank Contamination
Field Blank Contamination
Blank Spike Accuracy
Blank Spike Precision
Matrix Spike Accuracy
Matrix Spike Precision
Surrogate Recovery
Laboratory Duplicate Precision
Field Duplicate Precision

A minimum of ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following reports were generated during the evaluation of this data set and are presented as attachments to this report as applicable.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outlier Report.

Field Duplicate – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the ADR narrative.

Out of control events experienced by the laboratory have warranted the qualification of 0 % (0 results) and the rejection of 0 % (0 results) of the data set. These deficiencies are detailed in the referenced attachments, and discussed in the ADR narrative, where appropriate.

Released by

Date

Reason and Comment Codes

Code	Definition
C1	Diluted Out
C2	Flag Parent Only
C2S	Flag Parent (Soil); Batch (Water)
C3	No Action
C4	No QC Outliers
C5	One or both values <5x RL
C6	Recalculated Value
C7	Material Blanks
C8	Spike Insignificant
C9	No Flags; set to ND by method/cal. blank

Reasons

Code	Definition
A	Serial dilution
B	Calibration Blank - Negative
	Negative Blank
B1	Blank
B2	Calibration Blank
C	Continuing Calibration Verification
	Continuing Calibration Verification RRF
D	BS RPD
	Field Duplicate RPD
D1	Lab Replicate RPD
D2	MS RPD
E	Exceeds LinearCalibration Range
F	Hydrocarbon pattern does not match standard
G	Initial Calibration RRF
	Initial Calibration RSD
H	Test Hold Time
	Prep Hold Time
I	Internal standard
K1	Equip Blank
K2	Field Blank
K3	Trip Blank
L	LCS Recovery
M	MS Recovery
N	Blank - No Action
O	Interference check sample
P	Column RPD
Q	Material Blank
S	Surrogate
T	Receipt Temperature
TI	Tentatively Identified Compound
TR	Trace Level Detect
W	Column breakdown (pesticides)
X	Raised reporting limit
Y	Analyte not confirmed on second column

ADR CASE NARRATIVE

Laboratory ID: SDG# 0501021

Prior to loading and processing data, modifications to the project setup may be requested by the laboratory and/or contractor, and approved by the client. These modifications allow the loading of data that was not in complete agreement with the project guidance document; in some cases, variances to the project document may be in process, in others, the changes are required to accept data that had not been generated in compliance with the project guidance document. All project setup modifications are listed below:

There were no project setup modifications associated with this sample delivery group.

Chemistry Data Quality
The data submission process incorporates a series of stored procedures designed to identify conditions in electronic data deliverables (EDD) that would affect chemistry data quality. These conditions will not result in the qualification of the data; however, these findings should be reviewed for possible contractual non-compliance. A brief explanation of each finding encountered for this data set and the potential impact on chemistry data quality is summarized below.

1. **Reporting Limit**
   It was found that all field sample reporting limits (RL) reported by the lab did not meet the project specified RLs required in the project setup.

Data Verification
The data verification process includes a manual review of information on the chains of custody and laboratory case narratives, a check of all rejected results and a minimum of 10 percent of sample and QC results for consistency with hard copy reports, and a cursory review of all reports generated during the automated review process. The following comments are associated with the verification process:

1. **Volatile Organics by SW8260**
   The project setup requires that only CCCs be evaluated for the continuing calibration verification (CV). The laboratory appears to have reported all target analytes for the CV. Only the CCCs were evaluated.

   Due to multiple analysis of the parent samples and matrix spike samples, the data flagging system could not be determined either percent recovery or RPD for the matrix spike (MS) and matrix spike duplicate (SD). The data was manually reviewed and all values found to be within project specified acceptance criteria. No further action was necessary.

All of the reports utilized during the data verification process are provided as attachments to this report.

Batch Report

Facility: SWMU 58
Lab: ECEN
Filename: 0501021
Status: Certified - 1/18/2005
User: RebeccaHumphrey

Test Method: SW8260B
Prep Method: SW5030
Leach Method: NONE

Test Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Test Date and Time	Sample Type
LINU50105E	0501054I2r	NA	LABQC	WQ		CCV1093080	1/5/2005 7:21:00PM	CV1
	0501054I2r	NA	LABQC	WQ		LCS1851631	1/5/2005 8:07:00PM	BS1
	0501054I2r	NA	LABQC	WQ		MB1851632	1/5/2005 9:21:00PM	LB1
	0501054I2r	NA	FIELDQC	WQ	PARSTB1	0501021-01	1/5/2005 11:16:00PM	TB1
	0501054I2r	NA	C-41	WG	C-41GW001	0501021-02	1/6/2005 1:23:00AM	N1
	0501054I2r	NA	C-41	WG	C-41FD001	0501021-03	1/6/2005 1:55:00AM	FD1
	0501054I2r	NA	C-41	WG	C-41GW002	0501021-04	1/6/2005 2:27:00AM	N1
	0501054I2r	NA	C-41	WG	C-41GW003	0501021-05	1/6/2005 2:59:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW001	0501021-06	1/6/2005 3:30:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW003	0501021-08	1/6/2005 4:02:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW002	0501021-07	1/6/2005 4:34:00AM	N1
	0501054I2r	NA	C-42	WG	C-42GW002	0501021-07	1/6/2005 5:06:00AM	MS1
	0501054I2r	NA	C-42	WG	C-42GW002	0501021-07	1/6/2005 5:38:00AM	SD1
LINU50107C	0501074I1r	NA	LABQC	WQ		CCV1093081	1/7/2005 6:59:00AM	CV1
	0501074I1r	NA	LABQC	WQ		LCS1851651	1/7/2005 7:31:00AM	BS1
	0501074I1r	NA	LABQC	WQ		MB1851652	1/7/2005 8:34:00AM	LB1
	0501074I1r	NA	C-42	WG	C-42GW001	0501021-06	1/7/2005 1:20:00PM	N1
	0501074I1r	NA	C-42	WG	C-42GW002	0501021-07	1/7/2005 1:52:00PM	N1
	0501074I1r	NA	C-42	WG	C-42GW002	0501021-07	1/7/2005 2:23:00PM	MS1
	0501074I1r	NA	C-42	WG	C-42GW002	0501021-07	1/7/2005 2:55:00PM	SD1
	0501074I1r	NA	C-42	WG	C-42GW003	0501021-08	1/7/2005 3:58:00PM	N1
	0501074I1r	NA	C-43	WG	C-43GW001	0501021-09	1/7/2005 4:30:00PM	N1
	0501074I1r	NA	C-43	WG	C-43GW002	0501021-10	1/7/2005 5:02:00PM	N1
	0501074I1r	NA	C-43	WG	C-43GW003	0501021-11	1/7/2005 5:34:00PM	N1
	0501074I1r	NA	C-44	WG	C-44GW001	0501021-12	1/7/2005 6:06:00PM	N1

Batch Report

Facility: SWMU 58
Lab: ECEN
Filename: 0501021
Status: Certified - 1/18/2005
User: RebeccaHumphrey

Test Method: SW8260B
Prep Method: SW5030
Leach Method: NONE

Test Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Test Date and Time	Sample Type
LINU50110C	0501104I1r	NA	LABQC	WQ		CCV1093082	1/10/2005 8:00:00AM	CV1
	0501104I1r	NA	LABQC	WQ		LCS1851661	1/10/2005 8:32:00AM	BS1
	0501104I1r	NA	LABQC	WQ		MB1851661	1/10/2005 10:07:00AM	LB1
	0501104I1r	NA	C-43	WG	C-43GW001	0501021-09	1/10/2005 4:29:00PM	N1
	0501104I1r	NA	C-43	WG	C-43GW002	0501021-10	1/10/2005 5:01:00PM	N1
	0501104I1r	NA	C-43	WG	C-43GW003	0501021-11	1/10/2005 5:32:00PM	N1
LINU50111B	0501114I1r	NA	LABQC	WQ		CCV1093083	1/11/2005 7:16:00AM	CV1
	0501114I1r	NA	LABQC	WQ		LCS1851671	1/11/2005 7:48:00AM	BS1
	0501114I1r	NA	LABQC	WQ		MB1851672	1/11/2005 8:51:00AM	LB1
	0501114I1r	NA	C-44	WG	C-44GW002	0501021-13	1/11/2005 9:55:00AM	N1
	0501114I1r	NA	C-44	WG	C-44GW003	0501021-14	1/11/2005 10:26:00AM	N1

Detected Results

Facility: SWMU 58
Event: 2004 10 SWMU 58 Vertical Profile Borings
Reference: ISSS-539-01

SDG: 0501021

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	C-41FD001	FD	Carbon Tetrachloride	1.0	0.25 J	0.25 J	UG/L	TR
SW8260B/NONE	WG	C-41FD001	FD	Trichloroethene (TCE)	1.0	19	19	UG/L	
SW8260B/NONE	WG	C-41GW001	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-41GW001	N	Trichloroethene (TCE)	1.0	19	19	UG/L	
SW8260B/NONE	WG	C-41GW002	N	Carbon Tetrachloride	1.0	0.24 J	0.24 J	UG/L	TR
SW8260B/NONE	WG	C-41GW002	N	Trichloroethene (TCE)	1.0	18	18	UG/L	
SW8260B/NONE	WG	C-41GW003	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-41GW003	N	Trichloroethene (TCE)	1.0	16	16	UG/L	
SW8260B/NONE	WG	C-42GW001	N	1,1,2-Trichloroethane	1.0	0.54 J	0.54 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	Carbon Tetrachloride	1.0	4.2	4.2	UG/L	
SW8260B/NONE	WG	C-42GW001	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	Trichloroethene (TCE)	25	900	900	UG/L	
SW8260B/NONE	WG	C-42GW002	N	1,1,2-Trichloroethane	1.0	0.58 J	0.58 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Carbon Tetrachloride	1.0	4.9	4.9	UG/L	
SW8260B/NONE	WG	C-42GW002	N	Chloroform	1.0	0.82 J	0.82 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Tetrachloroethene (PCE)	1.0	0.17 J	0.17 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Trichloroethene (TCE)	25	1,000	1,000	UG/L	
SW8260B/NONE	WG	C-42GW003	N	1,1,2-Trichloroethane	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,1-Dichloroethene	1.0	0.21 J	0.21 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,2-Dichloropropane	1.0	0.097 J	0.097 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Carbon Tetrachloride	1.0	4.7	4.7	UG/L	
SW8260B/NONE	WG	C-42GW003	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Tetrachloroethene (PCE)	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Trichloroethene (TCE)	25	960	960	UG/L	
SW8260B/NONE	WG	C-43GW001	N	Carbon Tetrachloride	1.0	0.62 J	0.62 J	UG/L	TR

SDG: 0501021

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	C-43GW001	N	Chloroform	1.0	0.13 J	0.13 J	UG/L	TR
SW8260B/NONE	WG	C-43GW001	N	Trichloroethene (TCE)	4.0	120	120	UG/L	
SW8260B/NONE	WG	C-43GW002	N	Carbon Tetrachloride	1.0	0.61 J	0.61 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Chloroform	1.0	0.15 J	0.15 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Trichloroethene (TCE)	4.0	130	130	UG/L	
SW8260B/NONE	WG	C-43GW003	N	Carbon Tetrachloride	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Chloroform	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Trichloroethene (TCE)	4.0	120	120	UG/L	
SW8260B/NONE	WG	C-44GW001	N	Carbon Tetrachloride	1.0	31	31	UG/L	
SW8260B/NONE	WG	C-44GW001	N	Chloroform	1.0	0.40 J	0.40 J	UG/L	TR
SW8260B/NONE	WG	C-44GW001	N	Trichloroethene (TCE)	1.0	9.0	9.0	UG/L	
SW8260B/NONE	WG	C-44GW002	N	Carbon Tetrachloride	1.0	30	30	UG/L	
SW8260B/NONE	WG	C-44GW002	N	Chloroform	1.0	0.38 J	0.38 J	UG/L	TR
SW8260B/NONE	WG	C-44GW002	N	Trichloroethene (TCE)	1.0	8.2	8.2	UG/L	
SW8260B/NONE	WG	C-44GW003	N	Carbon Tetrachloride	1.0	29	29	UG/L	
SW8260B/NONE	WG	C-44GW003	N	Chloroform	1.0	0.39 J	0.39 J	UG/L	TR
SW8260B/NONE	WG	C-44GW003	N	Trichloroethene (TCE)	1.0	8.3	8.3	UG/L	

Qualified Results

Facility: SWMU 58
Event: 2004 10 SWMU 58 Vertical Profile Borings
Reference: ISSS-539-01

SDG: 0501021

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result	Qualified Result	Units	Reason
SW8260B/NONE	WG	C-41FD001	FD	Carbon Tetrachloride	1.0	0.25 J	0.25 J	UG/L	TR
SW8260B/NONE	WG	C-41GW001	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-41GW002	N	Carbon Tetrachloride	1.0	0.24 J	0.24 J	UG/L	TR
SW8260B/NONE	WG	C-41GW003	N	Carbon Tetrachloride	1.0	0.23 J	0.23 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	1,1,2-Trichloroethane	1.0	0.54 J	0.54 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW001	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	1,1,2-Trichloroethane	1.0	0.58 J	0.58 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	1,1-Dichloroethene	1.0	0.20 J	0.20 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Chloroform	1.0	0.82 J	0.82 J	UG/L	TR
SW8260B/NONE	WG	C-42GW002	N	Tetrachloroethene (PCE)	1.0	0.17 J	0.17 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,1,2-Trichloroethane	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,1-Dichloroethene	1.0	0.21 J	0.21 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	1,2-Dichloropropane	1.0	0.097 J	0.097 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Chloroform	1.0	0.83 J	0.83 J	UG/L	TR
SW8260B/NONE	WG	C-42GW003	N	Tetrachloroethene (PCE)	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-43GW001	N	Carbon Tetrachloride	1.0	0.62 J	0.62 J	UG/L	TR
SW8260B/NONE	WG	C-43GW001	N	Chloroform	1.0	0.13 J	0.13 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Carbon Tetrachloride	1.0	0.61 J	0.61 J	UG/L	TR
SW8260B/NONE	WG	C-43GW002	N	Chloroform	1.0	0.15 J	0.15 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Carbon Tetrachloride	1.0	0.64 J	0.64 J	UG/L	TR
SW8260B/NONE	WG	C-43GW003	N	Chloroform	1.0	0.14 J	0.14 J	UG/L	TR
SW8260B/NONE	WG	C-44GW001	N	Chloroform	1.0	0.40 J	0.40 J	UG/L	TR
SW8260B/NONE	WG	C-44GW002	N	Chloroform	1.0	0.38 J	0.38 J	UG/L	TR
SW8260B/NONE	WG	C-44GW003	N	Chloroform	1.0	0.39 J	0.39 J	UG/L	TR

DATA MANAGEMENT NARRATIVE

Laboratory ID: 0501021

Data Submission

The data submission process incorporates a series of stored procedures designed to identify valid value (VVL), logical (LE), and project specific errors (PSE) in electronic data deliverables (EDD). Automated data review (ADR) is most efficient when data generators correct all errors. Dependent primarily upon the electronic reporting capabilities of the data generator, the severity of the logical and project specific errors listed below have been reduced to warnings. A warning log is generated with each data submission and is presented as an attachment to this report. A brief explanation of each error encountered for this data set and the potential impact on data quality is summarized below.

1. **Project Specific Error (PSE) spPSE01L_Invalid_Units_QC**
   This PSE occurs when laboratory quality control samples are reported with units of percent as opposed to true values. This inconsistency does not affect data quality, unless the submittal is scheduled for delivery to the AFCEE in accordance with the ERPIMS 4.0 specification. Automated data review can be performed for laboratory QC when units are reported in percent or in concentration units. However, to avoid this warning on future submittals, the laboratory would need to report these values in units of concentration (i.e., ug/L).

2. **Logical Error (LE) spLE01_QAPPFLAGS_F**
   This LE warning occurs when there are positive results less than the RL and associated QAPPFLAGS are not "F". This requirement is only necessary if the project is an AFCEE project or if the data is to be submitted to ERPIMS. To avoid this warning in the future, apply QAPPFLAGS of "F" whenever the detected result is less than the RL.

A detailed description of the stored procedures utilized during the data submission process is provided as an attachment to this report (Submission Warnings).

Submission Warnings

Facility: SWMU 58
Data Generator: ECEN
File Name: W:\2005\0501021\0501021.LB1

PSE

Query Name	Finding	Record Count
spPSE01L_Invalid_Units_QC	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is TB/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is CV/STD; UNITS is PERCENT	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is N/STD; UNITS is PERCENT	36
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is BS/ORG; UNITS is PERCENT	16
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is MS/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is SD/ORG; UNITS is PERCENT	4
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is SD/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is LB/STD; UNITS is PERCENT	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is BS/STD; UNITS is PERCENT	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is FD/STD; UNITS is PERCENT	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is MS/ORG; UNITS is PERCENT	4
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is CV/ORG; UNITS is PERCENT	84

VVL

Query Name	Finding	Record Count
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.4020; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6420; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1650; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2370; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6350; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6240; RL is 1.0000; QAPPFLAGS is J	1

Submission Warnings

Facility: SWMU 58
Data Generator: ECEN
File Name: W:\2005\0501021\0501021.LB1

VVL

Query Name	Finding	Record Count
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.2010; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6060; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2030; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5770; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1420; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.8290; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5440; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2510; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1450; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3770; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2140; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.8260; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.8150; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1350; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2310; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.0970; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3870; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2290; RL is 1.0000; QAPPFLAGS is J	1

Submission Warnings

Facility:	SWMU 58
Data Generator:	ECEN
File Name:	W:\2005\0501021\0501021.LB1

Total Record Count:	570
Error Count:	0
Warning Count:	217

APPENDIX G

PARSONS

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: **Dean Reynolds, TEAD; Larry McFarland, TEAD**

Copy: **Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons**

From: **Jan Barbas, Parsons**

Date: **Thursday, December 23, 2004**

Subject: **TEAD SWMU-58 RFI - Waste Management**

This letter is to recommend disposition of the 4 drums summarized in Table One, attached. The waste was generated in association with the drilling of well C-44.

4 drums of saturated soil cutting waste were generated and one sample was taken, labeled IDW20. IDW20 was analyzed for TCLP VOCs. Analysis was conducted by Ecology and Environment, Inc, Lancaster NY, a Utah Certified laboratory.

Results have been received as data packages and electronic data deliverables. Parsons has reviewed the data and found QC to be acceptable. Analytical results and case narrative are attached in portable document format.

Listed Wastes Analysis:

No constituents were detected. Therefore no listed waste codes should be applied.

Characteristic Wastes Analysis:

The waste is known to be primarily soil. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No constituents were detected. Therefore no characteristic waste codes (40 CFR Part 261.24) should be applied.

Disposition:

Parsons recommends that this waste be returned to the site for disposal on the ground surface.

Parsons will arrange to dispose of the waste per your written instructions.

Table One

Container ID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ0432701	JDB	YES		55-GALLON	DRILL CUTTINGS, C-44	SOIL	11/22/2004	11/22/2004	11/22/2004	2/10/2005			

Sites	Location	Move Date	Move Date	Move Date
C-44	C-44	11/22/2004		
	UID-90	11/22/2004		

Container ID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ0432702	JDB	YES		55-GALLON	DRILL CUTTINGS, C-44	SOIL	11/22/2004	11/22/2004	11/22/2004	2/10/2005			

Sites	Location	Move Date	Move Date	Move Date
C-44	UID-90	11/22/2004		
	C-44	11/22/2004		

Container ID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ0432703	JDB	YES		55-GALLON	DRILL CUTTINGS, C-41	SOIL	11/22/2004	11/22/2004	11/22/2004	2/10/2005			

Sites	Location	Move Date	Move Date	Move Date
C-44	C-44	11/22/2004		
	UID-90	11/22/2004		

Container ID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ0432704	JJB	YES		55-GALLON	DRILL CUTTINGS, C-44	SOIL	11/22/2004	11/22/2004	11/22/2004	2/10/2005			

Sites	Location	Move Date	Move Date	Move Date
C-44	C-44	11/22/2004		
	UID-90	11/22/2004		

From: McFarland, Larry [mailto:larry.mcfarland@us.army.mil]
Sent: Mon 2/7/2005 8:17 AM
To: Barbas, Jan
Cc: Alloway, Kurt
Subject: RE: TEAD Phase II RFI - IRW Management

Jan/Kurt

TEAD has reviewed the analytical results and recommended disposition of soil cuttings from monitoring well C-44. Based on this review, TEAD concurs with the recommendation to return the cuttings to the well site, and spread them on the surface around the well-head.

Larry

analytical services center
International Specialists in Environmental Analysis
4493 Walden Avenue, Lancaster, New York 14086
Tel: 716/685-8080, 800/327-6534 • Fax: 716/685-0852 • Email: asc@ene.com

December 21, 2004

Jan Barbas
Parsons Engineering Science, Inc.
406 W. South Jordan Pkwy.
Suite 300
South Jordan, Utah 840953944

RE: Tooele RCRA Phase II
Work Order No.: **0411319**

Dear Jan Barbas,
Analytical Services Center received 1 sample on Tuesday, November 23, 2004 for the analyses presented in the following report.

The ASC certifies that the test results in this report meet all requirements of NELAC for which it holds certification except as noted in this narrative and/or as flagged in the report.

The ASC is accredited in the Fields of Testing Potable water (SDWA), Solid and Chemical Materials (Solid Hazardous Wastes, RCRA), Water (CWA and other non-potable water) and Air and Emissions. Its primary accrediting authorities are New York State Department of Health and Florida Department of Health. The particular analytes/methods certified may be ascertained by requesting the laboratory's current certificates from your laboratory Project Manager .

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

This report is not to be reproduced, except in full, without the written approval of the laboratory.

Sincerely,

Tony Bogolin
Project Manager
CC:
Enclosures as noted

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ecology and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

CLIENT:	Parsons Engineering Science, Inc.
Project:	Tooele RCRA Phase II
Lab Order:	0411319
Date Received:	11/23/2004

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Alt. Client Id	Collection Date
0411319-01A	IDW20		11/22/2004 2:00:00 PM

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: PARSONS ENGINEERING SCIENCE, INC.
Project: Tooele RCRA Phase II
Lab Order: 0411319

CASE NARRATIVE

GCMS VOLATILES
A DB 624 column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

TCLP analysis
All samples were analyzed within hold time.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample/duplicate (LCS/LCSD) recoveries and RPD values were acceptable.

All internal standard area responses were acceptable.

Tony Bogolin
Project Manager
December 21, 2004

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ...y and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

) Order: 0411319
:nt: Parsons Engineering Science, Inc.
ject: Tooele RCRA Phase II

DATES SUMMARY REPORT

B) Sample ID	(CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
319-01A	IDW20	Soil	TCLP Ext for VOCs by M 1311	11/22/2004 2:00:00 PM	11/23/2004 9:10:00 AM	14:C 12/6/2004 2:00:00 PM	12/6/2004 7:25:04 AM 200404648	NA	NA	NA	[
			TCLP Volatile Organic Compounds by Method 8260B			14:T 12/21/2004 4:22:15 PM	12/13/2004 4:29:00 PM 1078900	SAMP	10	10	[

From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

nalyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date time of completion of the preparation.
TCLP/SPLP Extractions and subsequent preparation tests..."Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects extraction from the original sample leacheate unless an "RE" Sample exisits for the extraction (tumble) test.

S Version #: 041220_1500

Printed: Tuesday, December 21, 2004 4:03:44 PM

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ecology and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Work Order: 0411319

Method References

GCMS Volatiles

TCLP VOCs by Method 8260B	Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. 3rd ed. 1986. Volumes.1A, 1B, 1C & Volume 2. (Includes all Updates). U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

SAMPLE RECEIPT RECORDS

CHAIN OF CUSTODY	Project Name:	Tooele Industrial Area	Contractor:	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
PARSONS	Project Manager:	Ed Staes	Installation:	TEAD	Suite 300 South Jordan, Utah 84095
COC ID: 913	Sample Coordinator:	Jeff Bigelow	Sample Program:	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW20	IDW20	SD	B	N	1	11-22-04	1410	JJB	—	—	2

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
TCLPVOC	ECEN					

Remarks:

IDW Sample for containing
PARSN204132701-04
Well C-44

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
[signature]	11-22-04 1630	[signature]	11-23-04 0940

Cooler Receipt Form

No. of Packages:	1	**Date Received:**	11.23.04
Package Receipt No.:	1500	**Project or Site Name:**	Toole
Client:	Parsons		

A. Peliminary Examination and Receipt Phase	Circle One		
1. Did coolers come with airbill or packing slip?	Yes	No	NA
Circle carrier here and print airbill number below: Fed Ex Airborne Client Other _____			
Shipped as high hazard or dangerous goods?	Yes	No	NA
2. Did cooler(s) have custody seals?	Yes	No	NA
3. Were custody seals unbroken and intact on receipt?	Yes	No	NA
4. Were custody seals dated and signed?	Yes	No	NA
5. How was package secured? ☐ Not secured ☒ Fiberglass Tape ☐ _____			

B. Unpacking Phase

6. Date cooler(s) opened: 11.23.04 Cooler(s) opened by: _____ (Signature)

7. Was a temperature blank vial included inside cooler(s)? Yes **No** NA

Please Record Temperature Vial or Cooler Temperature for Each Cooler, Range (2° - 6°C)*

Airbill No.	Temp °C	Airbill No.	Temp °C	Airbill No.	Temp °C
8457 2784 6669	3°C				

Thermometer No.: 231 Correction Factor: 0.0 *If temperature is outside of acceptable range, prepare a PM Notification form indicating affected containers.

8. Were the C-O-C forms received?	Yes	No	NA
C-O-C forms numbers if present:			
9. Was enough packing material used in cooler(s)?	Yes	No	NA
Type of material: ☐ Vermiculite ☐ Bubble Wrap ☐ Other _____			
10. If cooling was required, what was the means (type ice) of cooling used: ☐ Wet ☒ Dry ☐ Blue ☐ Other			NA
11. Were all containers sealed in separate plastic bags?	Yes	No	NA
12. Did all containers arrive unbroken and in good condition?	Yes	No	NA

13. Interim storage area if not logged: _____

In: Date _____ Time _____ Signature _____

Out: Date _____ Time _____ Signature _____

C. Login Phase

Samples Logged In By Signature: _____ Date: 11/23/04

14. Were all container labels complete (e.g. date, time preserved)?	Yes	No	NA
15. Were all C-O-C forms filled out properly in black ink and signed?	Yes	No	NA
16. Did the C-O-C form agree with containers received?	Yes	No	NA
17. Were the correct containers used for the tests requested?	Yes	No	NA
18. Were the correct preservatives listed on the sample labels?	Yes	No	NA
19. Was a sufficient sample volume sent for the tests requested?	Yes	No	NA
20. Were all volatile samples received without headspace?	Yes	No	NA

RESULTS SUMMARY

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc. **Client Sample ID:** IDW20
Lab Order: 0411319 **Alt. Client ID:**
Project: Tooele RCRA Phase II **Collection Date:** 11/22/2004 2:00:00 P **% Moist:**
Lab ID: 0411319-01A **Sample Type:** SAMP **Matrix:** Soil **Test Code:** 1_1311_8260B_L

TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B **Method:** SW8260B **Prep Method:** SW1311

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1-Dichloroethene	ND		0.0500	mg/L	10	12/13/2004 4:29:00 PM	ROBERT_041213C	KK
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	96		82 - 124	%REC	10	12/13/2004 4:29:00 PM	ROBERT_041213C	KK
Surr:4-Bromofluorobenzene	100		87 - 115	%REC	10			
Surr:Toluene-d8	103		85 - 115	%REC	10			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to matrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

APPENDIX H

Baker Tank
#PARSNZ0430901

PARSONS

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: **Dean Reynolds, TEAD; Larry McFarland, TEAD**

Copy: **Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons**

From: **Jan Barbas, Parsons**

Date: **Thursday, December 23, 2004**

Subject: **TEAD SWMU-58 RFI - Waste Management**

This letter is to recommend disposition of the contents of the 6500 gallon Baker Tank summarized in Table One, attached.

One sample of the contents was taken, labeled IDW21. IDW21 was analyzed for total VOCs. Analysis was conducted by Ecology and Environment, Inc, Lancaster NY, a Utah Certified laboratory.

Results have been received as data packages and electronic data deliverables. Parsons has reviewed the data and found QC to be acceptable. Analytical results and case narrative are attached in portable document format.

Listed Wastes Analysis:

Trichloroethene at 155 µg/L, tetrachloroethene at 1.09 µg/L, chloroform at 0.167 µg/L, and carbon tetrachloride at 0.761 µg/L were detected in IDW21. Therefore it is recommended that the waste be coded as F001 and F002 hazardous.

Characteristic Wastes Analysis:

The waste is known to be primarily water. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No constituents were detected in excess of TCLP limits. Therefore no characteristic waste codes (40 CFR Part 261.24) should be applied.

Disposition:

Parsons recommends that this waste be disposed of in TEAD's treatment facility.

Parsons will arrange to dispose of the waste per your written instructions.

Table One

Container ID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ0430901	JJB	YES		6500-GALLON	DECON, DEVELOPMENT WATER C-41, C-42, I610-VPB001	PURGE WATER	11/4/2004	12/1/2004	11/4/2004	**1/23/2005**			

Sites	Location	Move Date	Move Date	Move Date
C-41	UID-90	11/4/2004		
C-42				
C-44				
I610-VPB001				

rom: McFarland, Larry [mailto:larry.mcfarland@us.army.mil]
Sent: Tuesday, January 04, 2005 2:54 PM
To: Kubacki, Steve
Cc: Jirik, Richard
Subject: Processing SWMU 58 Well Development Water

Steve,

As we discussed on the phone earlier, Tooele Army Depot has determined that the well development water generated during the SWMU 58 investigation, that is stored in the 6500 gallon Baker tanks in Parsons 90 day yard, can be processed through the ground water treatment plant. Constituent detected in the water include Trichloroethene at 155 µg/L, tetrachloroethene at 1.09 µg/L, chloroform at 0.167 µg/L, and carbon tetrachloride at 0.761 µg/L, all of which we are permitted for treatment through the system. Attached for your reference is a copy of the analytical report for samples collected from the tank. Parsons would like to transfer the water to the treatment plant on January 5th. Richard Jirik will contact you to coordinate the transfer.

Thanks

Larry McFarland
Environmental Office, SJMTE-CS-EO
1 Tooele Army Depot, Building 8
Tooele, Utah 84074-5003
Phone (435) 833-3235 Fax (435) 833-2839
larry.mcfarland@us.army.mil
mcfarlal@emh2.tooele.army.mil

analytical services center
International Specialists in Environmental Analysis
4493 Walden Avenue, Lancaster, New York 14086
a division of ecology and environment, inc.
Tel: 716/685-8080, 800/327-6534 • Fax: 716/685-0852 • Email: asc@ene.com

December 21, 2004

Jan Barbas
Parsons Engineering Science, Inc.
406 W. South Jordan Pkwy.
Suite 300
South Jordan, Utah 840953944

RE: Tooele RCRA Phase II
Work Order No.: **0412033**

Dear Jan Barbas,

Analytical Services Center received 2 samples on Thursday, December 02, 2004 for the analyses presented in the following report.

The ASC certifies that the test results in this report meet all requirements of NELAC for which it holds certification except as noted in this narrative and/or as flagged in the report.

The ASC is accredited in the Fields of Testing Potable water (SDWA), Solid and Chemical Materials (Solid Hazardous Wastes, RCRA), Water (CWA and other non-potable water) and Air and Emissions. Its primary accrediting authorities are New York State Department of Health and Florida Department of Health. The particular analytes/methods certified may be ascertained by requesting the laboratory's current certificates from your laboratory Project Manager .

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

This report is not to be reproduced, except in full, without the written approval of the laboratory.

Sincerely,

Tony Bogolin
Project Manager
CC:
Enclosures as noted

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ecology and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Lab Order: 0412033
Date Received: 12/2/2004

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Alt. Client Id	Collection Date
0412033-01A	IDW21		12/1/2004 8:15:00 AM
0412033-02A	IDWTB5		12/1/2004 8:15:00 AM

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: PARSONS ENGINEERING SCIENCE, INC.
Project: Tooele RCRA Phase II
Lab Order: 0412033

CASE NARRATIVE

Trip Blank (IDWTB5) analysis was cancelled by Jan Barbas on December 3, 2004.

GCMS VOLATILES
A DB 624 column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

Sample Analysis
All aqueous volatile samples were determined to be at a pH of 1.

All samples were analyzed within hold time.

Sample IDW21 was analyzed at a secondary dilution due to the elevated level of trichloroethene present. Both sets of data have been reported.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

There were no manual integrations required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

Tony Bogolin
Project Manager
December 21, 2004

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ty and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Order: 0412033
nt: Parsons Engineering Science, Inc.
ject: Tooele RCRA Phase II

DATES SUMMARY REPORT

B) Sample ID (CLIENT)	Matrix	Test Name	Collection Date	Received Date	HT (Days) / HT Expire	Analyzed* - Analysis/BatchID	Type	DF	#Analytes	Fl
033-01A IDW21	Water	Low Level VOCs by Method 8260B	12/1/2004 8:15:00 AM	12/2/2004 9:04:00 AM	14:C 12/15/2004 8:15:00 AM	12/8/2004 9:37:00 AM 1080095	SAMP	1	21	[

From: C-Collection / R- Receipt(VTSR) / P-Prep / T-TCLP Prep

nalyzed" reflects the analysis date and time or injection time for analytical tests. For preparation tests "Analyzed" reflects the start of the preparation except when "AFCEE criteria used"; flag indicates date time of completion of the preparation.
TCLP/SPLP Extractions and subsequent preparation tests..."Analyzed" reflects the date of TCLP/SPLP Extraction/preparation. For Re-extracted (RE) samples: Preparation tests completed dates reflects extraction from the original sample leacheate unless an "RE" Sample exisits for the extraction (tumble) test.

S Version #: 041220_1500

Printed: Tuesday, December 21, 2004 4:03:00 PM

Analytical Services Center
International Specialists in Environmental Analysis
Lancaster, New York 14086-
a division of ecology and environment, inc.
Phone: (716) 685-8080 Fax: (716) 685-0852

Laboratory Results

NYS ELAP ID#: 10486

Client: Parsons Engineering Science, Inc.
Project: Tooele RCRA Phase II
Work Order: 0412033

Method References

GCMS Volatiles

Parsons, Tooele - VOCs, Low Level by GCMS Method 8260B	Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. 3rd ed. 1986. Volumes.1A, 1B, 1C & Volume 2. (Includes all Updates). U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

Sample Receipt Records for Baker Tank #PARSNZ0430901

CHAIN OF CUSTODY

PARSONS

COC ID: 920

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
Project Manager:	Ed Staes	**Installation:**	TEAD	Suite 300 South Jordan, Utah 84095
Sample Coordinator:	Jeff Bigelow	**Sample Program:**	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW21	IDW21	WW	B	N	1	12-1-04	08:15	JJB	–	–	3

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
VOC	ECEN	12-1-04	3			01120401

Remarks:

IDW Sample

for container. PARSN20430401

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
TO FED EX	01 DEC 04 / 1000		12/2/04 0804

CHAIN OF CUSTODY

PARSONS

COC ID: 921

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons - SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway
Project Manager:	Ed Staes	**Installation:**	TEAD	Suite 300 South Jordan, Utah 84095
Sample Coordinator:	Jeff Bigelow	**Sample Program:**	Shallow Soil Sampling	(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDWTB5	IDWTB5	WQ	NA	TB	1	12-1-04	08:15	JTB	—	—	1

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
VOC	ECEN	12-1-04	1			

Remarks:

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
TO FED EX	01 DEC 04 1000		12/2/04 0804

Cooler Receipt Form

No. of Packages:	1	**Date Received:**	12-2-04
Package Receipt No.:	15125	**Project or Site Name:**	Toodle
Client:	Parsons		

A. Peliminary Examination and Receipt Phase

	Circle One		
1. Did coolers come with airbill or packing slip?	(Yes)	No	NA
Circle carrier here and print airbill number below: (Fed Ex) Airborne Client Other _____			
Shipped as high hazard or dangerous goods?	Yes	(No)	NA
2. Did cooler(s) have custody seals?	(Yes)	No	NA
3. Were custody seals unbroken and intact on receipt?	(Yes)	No	NA
4. Were custody seals dated and signed?	(Yes)	No	NA
5. How was package secured? ☐ Not secured ☐ Fiberglass Tape ☑ Plastic			

B. Unpacking Phase

6. Date cooler(s) opened: 12-2-04 Cooler(s) opened by: _____ (Signature)

7. Was a temperature blank vial included inside cooler(s)? (Yes) No NA

Please Record Temperature Vial or Cooler Temperature for Each Cooler, Range (2° - 6°C)*

Airbill No.	Temp °C	Airbill No.	Temp °C	Airbill No.	Temp °C
7921 4854 4397	2°				

Thermometer No.: 231 Correction Factor: -0

*If temperature is outside of acceptable range, prepare a PM Notification form indicating affected containers.

8. Were the C-O-C forms received?	(Yes)	No	NA
C-O-C forms numbers if present:			
9. Was enough packing material used in cooler(s)?	Yes	No	NA
Type of material: ☐ Vermiculite ☑ Bubble Wrap ☐ Other _____			
10. If cooling was required, what was the means (type ice) of cooling used: ☑ Wet ☐ Dry ☐ Blue ☐ Other			NA
11. Were all containers sealed in separate plastic bags?	(Yes)	No	NA
12. Did all containers arrive unbroken and in good condition?	(Yes)	No	NA

13. Interim storage area if not logged: _____

In: Date _____ Time _____ Signature _____

Out: Date _____ Time _____ Signature _____

C. Login Phase

Samples Logged in By Signature: D Steinmann Date: 12-2-04

14. Were all container labels complete (e.g. date, time preserved)?	(Yes)	No	NA
15. Were all C-O-C forms filled out properly in black ink and signed?	(Yes)	No	NA
16. Did the C-O-C form agree with containers received?	(Yes)	No	NA
17. Were the correct containers used for the tests requested?	(Yes)	No	NA
18. Were the correct preservatives listed on the sample labels?	(Yes)	No	NA
19. Was a sufficient sample volume sent for the tests requested?	(Yes)	No	NA
20. Were all volatile samples received without headspace?	(Yes)	No	NA

Wastewater Analytical Results for Baker Tank #PARSNZ0430901

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.
Client Sample ID: IDW21
Lab Order: 0412033
Alt. Client ID:
Project: Tooele RCRA Phase II
Collection Date: 12/1/2004 8:15:00 AM **% Moist:**
Lab ID: 0412033-01A **Sample Type:** SAMP **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B

Method: SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		1.00	µg/L	1	12/8/2004 9:37:00 AM	LINUS_041208A	DWW
1,1,2-Trichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethane	ND		1.00	µg/L	1			
1,1-Dichloroethene	ND		1.00	µg/L	1			
1,2-Dichloroethane	ND		1.00	µg/L	1			
1,2-Dichloropropane	ND		1.00	µg/L	1			
Benzene	ND		1.00	µg/L	1			
Carbon tetrachloride	0.761	J	1.00	µg/L	1			
Chloroethane	ND		1.00	µg/L	1			
Chloroform	0.167	J	1.00	µg/L	1			
cis-1,2-Dichloroethene	ND		1.00	µg/L	1			
Ethylbenzene	ND		1.00	µg/L	1			
m,p-Xylene	ND		1.00	µg/L	1			
Methylene chloride	ND		2.00	µg/L	1			
Naphthalene	ND		1.00	µg/L	1			
o-Xylene	ND		1.00	µg/L	1			
Tetrachloroethene	1.09		1.00	µg/L	1			
Toluene	ND		1.00	µg/L	1			
trans-1,2-Dichloroethene	ND		1.00	µg/L	1			
Trichloroethene	158	E	1.00	µg/L	1			
Vinyl chloride	ND		1.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	101		70 - 130	%REC	1	12/8/2004 9:37:00 AM	LINUS_041208A	DWW
Surr:4-Bromofluorobenzene	92		70 - 130	%REC	1			
Surr:Toluene-d8	95		70 - 130	%REC	1			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to matrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

Analytical Services Center
International Specialists in Environmental Analysis
4493 Walden Avenue
a division of ecology and environment, inc. Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: Parsons Engineering Science, Inc.
Client Sample ID: IDW21
Lab Order: 0412033
Alt. Client ID:
Project: Tooele RCRA Phase II
Collection Date: 12/1/2004 8:15:00 AM **% Moist:**

Lab ID: 0412033-01A **Sample Type:** DL **Matrix:** Water **Test Code:** C_8260B_5030B_LL_W_018

LOW LEVEL VOCS BY METHOD 8260B **Method:** SW8260B **Prep Method:** SW5030B_LL

Analyte	Result	Q	RL	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		5.00	µg/L	5	12/8/2004 4:31:00 PM	LINUS_041208A	DWW
1,1,2-Trichloroethane	ND		5.00	µg/L	5			
1,1-Dichloroethane	ND		5.00	µg/L	5			
1,1-Dichloroethene	ND		5.00	µg/L	5			
1,2-Dichloroethane	ND		5.00	µg/L	5			
1,2-Dichloropropane	ND		5.00	µg/L	5			
Benzene	ND		5.00	µg/L	5			
Carbon tetrachloride	0.750	J	5.00	µg/L	5			
Chloroethane	ND		5.00	µg/L	5			
Chloroform	ND		5.00	µg/L	5			
cis-1,2-Dichloroethene	ND		5.00	µg/L	5			
Ethylbenzene	ND		5.00	µg/L	5			
m,p-Xylene	ND		5.00	µg/L	5			
Methylene chloride	ND		10.0	µg/L	5			
Naphthalene	ND		5.00	µg/L	5			
o-Xylene	ND		5.00	µg/L	5			
Tetrachloroethene	0.995	J	5.00	µg/L	5			
Toluene	ND		5.00	µg/L	5			
trans-1,2-Dichloroethene	ND		5.00	µg/L	5			
Trichloroethene	155		5.00	µg/L	5			
Vinyl chloride	ND		5.00	µg/L	5			
Surr:1,2-Dichloroethane-d4	102		70 - 130	%REC	5	12/8/2004 4:31:00 PM	LINUS_041208A	DWW
Surr:4-Bromofluorobenzene	95		70 - 130	%REC	5			
Surr:Toluene-d8	94		70 - 130	%REC	5			

Definitions:

* - Recovery outside QC limits
B - Analyte found in Method blank
D - Diluted due to maxtrix or extended target compounds
DF - Dilution Factor
DNI - Did not Ignite
E - Result above quantitation limit (high standard or ICP linear range).
H - Value Exceeds Maximum Contaminant Level
J - Estimated value
M - Matrix Spike Recovery outside limits
N - Single Column Analysis
NC - Not Calculated
ND - Not Detected at the Reporting Limit
NP - Petroleum Pattern is not present
P - Post Spike Recovery outside limits
R - RPD outside recovery limits

Baker Tank
#PARSNZ0433701

PARSONS

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: Dean Reynolds, TEAD; Larry McFarland, TEAD

Copy: Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons

From: Jan Barbas, Parsons

Date: Tuesday, March 08, 2005

Subject: TEAD SWMU-58 RFI - Waste Management

This letter is to recommend disposition of the contents of the 6500 gallon Baker Tank summarized in Table One, attached.

One sample of the contents was taken, labeled IDW29. IDW29 was analyzed for total VOCs. Analysis was conducted by Severn Trent Laboratories, Inc., West Sacramento, CA, (STL). STL is a Utah certified laboratory.

Results have been received as a data package and electronic data deliverable. Parsons has reviewed the data and found QC to be acceptable. Analytical results and case narrative are attached in portable document format.

Listed Wastes Analysis:

Trichloroethene at 4.0 µg/L, chloroform at 0.46 µg/L, ethylbenzene at 1.1 µg/L, naphthalene at 1.6 µg/L, m/p-xylenes at 1.0 µg/L, and o-xylene at 1.0 µg/L were detected in IDW29.

Sources of the fuel components are unknown and therefore should not trigger F-listed waste codes. Chloroform does not trigger an F-list code. Therefore it is recommended that the waste be coded as F001 and F002 hazardous based on the presence of trichloroethene.

Characteristic Wastes Analysis:

The waste is known to be primarily water. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No constituents were detected in excess of TCLP limits. Therefore no characteristic waste codes (40 CFR Part 261.24) should be applied.

Land Disposal Restriction Analysis:

No constituents were detected in excess of land disposal restriction limits.

Disposition:

Parsons recommends that the waste be disposed of at the Grassy Mountain TSDF by solidification.

Parsons will arrange to dispose of the waste per your written instructions.

Table One

Container ID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ0433701	JJB	YES		6500-GALLON	DECON AND DEVELOPMENT WATER , C-41, C-42, C43, C-44, I610-VPB001,002,003,005,009, I600-VPB001, I620-VPB002, I630-VPB001	PURGE WATER	12/2/2004	2/3/2005	12/2/2004	**2/20/2005**			

Sites	Location	Move Date	Manifest ID	Manifest Date
C-41	UID-90	12/2/2004		
C-42				
C-43				
C-44				
I600-VPB001				
I610-VPB002				
I610-VPB003				
I610-VPB005				
I610-VPB009				
I620-VPB002				
I630-VPB001				

From: McFarland, Larry [larry.mcfarland@us.army.mil]
Sent: Thursday, March 10, 2005 9:52 AM
To: Barbas, Jan
Subject: RE: TEAD Phase II RFI Waste Management
Based on our telephone conversation last week, (yourself, Ed, and I), Parson was directed at that time, to dispose of the contents of the Baker Tank, (IDW29) at an appropriate off-site TSDF.

Larry

-----Original Message-----
From: Barbas, Jan [mailto:Jan.Barbas@parsons.com]
Sent: Thursday, March 10, 2005 9:42 AM
To: McFarland, Larry
Subject: RE: TEAD Phase II RFI Waste Management

Thanks Larry,

We'll need a written reponse on IDW29 (baker tank) too... I guess I could interpret returning the signed profile as a concurrence, but we'd prefer to have at least a brief note for the record.

Jan

From: McFarland, Larry [mailto:larry.mcfarland@us.army.mil]
Sent: Thursday, March 10, 2005 8:32 AM
To: Alloway, Kurt; Barbas, Jan; Cole, Carl (TEAD); Jirik, Richard; Mackenzie Doug (Sac District) (doug.d.mackenzie@spk01.usace.army.mil); Reynolds, Dean (Environmental)
Subject: FW: TEAD Phase II RFI Waste Management

All,

TEAD concurs with the Parsons recommendation presented in the attach memorandum for disposal of soil cutting generated from the drilling of boring 1610-VPB007 and 1610-VPB010. Cutting should be disposed of as follows-

Container # PARSNZ0503802 (Sample #IDW33)
The characterization sample collected from this container contained chloroform. Chloroform was also detected in the method blank. Chloroform may represent site conditions or a lab contaminant. Regardless of the source of chloroform detected, the concentration was below the regulatory limit for toxicity, and therefore can be considered a non-regulated waste. The waste will be returned to the site of generation for disposal on the ground surface. If it is not possible to return the cuttings to the site of generation, as the boring may have been drilled through concrete or aspahalt, the cutting can be disposed of at an alternate site on UID.

Container # PARSNZ0503901 (Sample #IDW34)
The characterization sample collected from this container contained chloroform. Chloroform was also detected in the method blank. Chloroform may represent site conditions or a lab contaminant. Regardless of the source of chloroform detected, the concentration was below the regulatory limit for toxicity, and therefore can be considered a non-regulated waste. The waste will be returned to the site of generation for disposal on the ground surface. If it is not possible to return the cuttings to the site of generation, as the boring may have been drilled through concrete or aspahalt, the cutting can be disposed of at an alternate site on UID.

Larry McFarland

-----Original Message-----
From: Barbas, Jan [mailto:Jan.Barbas@parsons.com]
Sent: Wednesday, March 09, 2005 8:34 AM
To: Alloway, Kurt; colec@emh2.tooele.army.mil; doug.d.mackenzie@usace.army.mil; Jirik, Richard; Maryellen.Mackenzie@usace.army.mil; mcfarlal@emh2.tooele.army.mil; reynoldd@emh2.tooele.army.mil

SEVERN TRENT STL

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605

Tel: 916 373 5600 Fax: 916 372 1059
www.stl-inc.com

February 28, 2005

STL SACRAMENTO PROJECT NUMBER: G5B040373
PO/CONTRACT: 744139-30012

Jan Barbas
Parsons
406 West South Jordan Parkway
Suite 300
South Jordan, UT 84095

Dear Mr. Barbas,

This report contains the analytical results for the samples received under chain of custody by STL Sacramento on February 4, 2005. These samples are associated with your Tooelle Industrial Area project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

Preliminary results were sent via e-mail on February 18, 2005.

If you have any questions, please feel free to call me at (916) 374-4427.

Sincerely,

Nilo Ligi
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G5B040373

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G5B040373

General Comments

Sample #1 was received at STL Sacramento at 2 degrees Centigrade. Samples #2, 3, and 4 were received at STL North Canton at 3.8 degrees Centigrade.

Sample #2 was canceled per Jan Barbas on 2/9/05.

There were no anomalies associated with this project.

SEVERN TRENT STL

ACCREDITED IN ACCORDANCE WITH NELAC

STL Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	Oregon*	CA 200005
Arizona	AZ0613	Pennsylvania	68-1272
Arkansas	04-067-0	South Carolina	87014002
California	01150CA	Texas	TX270 2004A
Colorado	NA	Utah*	QUAN1
Connecticut	PH 0691	Virginia	00178
Florida*	E87570	Washington	C087
Georgia	960	West Virginia	9930C 334
Hawaii	NA	Wisconsin	998204680
Louisiana	03943	NFESC	NA
Michigan	9947	USACE	NA
Nevada	CA44	USDA Foreign Plant	37-82605
New Jersey*	CA005	USDA Foreign Soil	S-46613
New York	11666		

*NELAP accredited. A more detailed parameter list is available upon request. Update 1/27/05

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary
G5B040373

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
G3VK3	1	IDW29	2/3/2005 01:30 PM	2/4/2005 09:00 AM
G3WTH	2	IDW30	1/25/2005 04:00 PM	2/4/2005 09:00 AM
G3WTP	3	IDW31	1/30/2005 05:00 PM	2/4/2005 09:00 AM
G3WT1	4	IDW32	2/1/2005 05:30 PM	2/4/2005 09:00 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

Sample Receipt Records for Baker Tank #PARSNZ0433701

G5B040373

CHAIN OF CUSTODY

PARSONS

COC ID: 943

Project Name: Tooele Industrial Area
Project Manager: Ed Staes
Sample Coordinator: Jeff Bigelow

Contractor: Parsons-SLC
Installation: TEAD
Sample Program: Deep Soil-Gas Investigation

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW29	IDW29	WW	B	N	1	03-FEB-2005	1330	KA	0	0	3

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:
VOC	SVLS						

PARSNZ04337001

6500 GAL BAKER TANK

RECEIVED IN GOOD CONDITION
UNDER COC
FEB 04 2005
INI

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
TO FED EX	03FEB2003 / 1530		2-4-05 1130

To: Field Portable Analytical, 3330 Cameron Park Dr., Suite 850, Cameron Park, CA 95682 (530) 676-662

Thursday, February 03, 2005

STL Sacramento (916) 373 - 5600

SEVERN TRENT **STL**

LOT RECEIPT CHECKLIST
STL Sacramento

CLIENT Parsons PM VL LOG # 30825

LOT# (QUANTIMS ID) G5B040373 QUOTE# 62857 LOCATION VB

	Initials	Date
DATE RECEIVED 2-4-05 TIME RECEIVED 900	AS	2/4/05

DELIVERED BY ☒ FEDEX ☐ CA OVERNIGHT ☐ CLIENT
☐ AIRBORNE ☐ GOLDENSTATE ☐ DHL
☐ UPS ☐ BAX GLOBAL ☐ GO-GETTERS
☐ STL COURIER ☐ COURIERS ON DEMAND
☐ OTHER

CUSTODY SEAL STATUS ☒ INTACT ☐ BROKEN ☐ N/A

CUSTODY SEAL #(S) Seals

SHIPPPING CONTAINER(S) ☐ STL ☒ CLIENT ☐ N/A

TEMPERTURE RECORD (IN °C) IR 1 ☐ 3 ☒ ☐ OTHER

COC #(S) NA 943

TEMPERATURE BLANK

SAMPLE TEMPERATURE 2°

COLLECTOR'S NAME: ☐ Verified from COC ☒ Not on COC

pH MEASURED ☐ YES ☐ ANOMALY ☒ N/A

LABELED BY.....

LABELS CHECKED BY.....

PEER REVIEW ☒ NA

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
WETCHEM ☒ N/A
VOA-ENCORES ☒ N/A

☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL ☒ N/A

☒ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES ☐ N/A

☐ Clouseau ☐ TEMPERATURE EXCEEDED (2 °C – 6 °C)*1 ☒ N/A

☐ WET ICE ☐ BLUE ICE ☐ GEL PACK ☐ NO COOLING AGENTS USED ☐ PM NOTIFIED

Notes:

*1 Acceptable temperature range for State of Wisconsin samples is ≤ 4°C.

G5B040373

CHAIN OF CUSTODY PARSONS COC ID: 945	Project Name: Tooele Industrial Area	Contractor: Parsons-SLC	Parsons Point of Contact: Jan Barbas 406 W. South Jordan Parkway Suite 300 South Jordan, Utah 84095 (801) 572-5999 FAX (801) 572-9069
	Project Manager: Ed Staes	Installation: TEAD	
	Sample Coordinator: Jeff Bigelow	Sample Program: Deep Soil-Gas Investigation	

Site ID	Location ID	Sample.ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW30	IDW30	SD	G	N	1	KA ~~03-FEB-2005~~	1600	KA	0	337	2
Analysis		Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
TCLPVOC		SVLS		2								

25 JAN 2005

PARSN205007 01

(I610 VP5 005)

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
To FedEx	03 FEB 2005 / 1530	Ann Maddux	2/4/05 9:30am

To: Field Portable Analytical, 3330 Cameron Park Dr., Suite 850, Cameron Park, CA 95682 (530) 676-662

Thursday, February 03, 2005

STL Sacramento (916) 373 - 5600

G5B040373

CHAIN OF CUSTODY

PARSONS

COC ID: 944

Project Name:	Tooele Industrial Area	Contractor:	Parsons-SLC
Project Manager:	Ed Slaes	Installation:	TEAD
Sample Coordinator:	Jeff Bigelow	Sample Program:	Deep Soil-Gas Investigation

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW31	IDW31	SD	G	N	1	KA ~~03-FEB-2005~~ 30 JAN 2005	1700	KA	0	337	2

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
TCLPVOC	SVLS		2			

Remarks:

PARSNZ050251
(I610-VP8004)

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
To FedEx	03 Feb 2005 / 1530	Ann Maddux	2/4/05 9:30am

STL Sacramento (916) 373 - 5600

7 of 400

G5B040373

CHAIN OF CUSTODY

PARSONS

COC ID: 946

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons-SLC
Project Manager:	Ed Staes	**Installation:**	TEAD
Sample Coordinator:	Jeff Bigelow	**Sample Program:**	Deep Soil-Gas Investigation

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW32	IDW32	SD	G	N	1	~~03-FEB-2005~~ KA 01 FEB 2005	1730	KA	0	335	2

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
TCLPVOC	SVLS		2			

Remarks:

PARSNZ05028Ø1
(I610-VPB008)

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	03FEB2005 / 1530	Ann Maddux	2/4/05 9:30AM.

To: Field Portable Analytical, 3330 Cameron Park Dr., Suite 850, Cameron Park, CA 95682 (530) 676-662

Thursday, February 03, 2005

STL Sacramento (916) 373 - 5600

STL Cooler Receipt Form/Narrative **Lot Number:** G5B040373
North Canton Facility

Client: Parson's Project: Tooele Ind. Area Quote#:
Cooler Received on: 2-04-05 Opened on: 2-04-05 by: Ann Maddux (Signature)

Fedx ☒ Client Drop Off ☐ UPS ☐ DHL ☐ FAS ☐ Other:
STL Cooler No# Foam Box ☐ Client Cooler ☒ Other

1. Were custody seals on the outside of the cooler? Yes ☒ No ☐ Intact? Yes ☒ No ☐ NA ☐
   If YES, Quantity 2
   Were the custody seals signed and dated? Yes ☒ No ☐ NA ☐
2. Shipper's packing slip attached to this form? Yes ☒ No ☐ NA ☐
3. Did custody papers accompany the samples? Yes ☒ No ☐ Relinquished by client? Yes ☒ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☒ No ☐
5. Packing material used: Bubble Wrap ☒ Foam ☐ None ☐ Other :
6. Cooler temperature upon receipt 3.8 °C (see back of form for multiple coolers/temp)

METHOD: Temp Vial ☐ Coolant & Sample ☐ Against Bottles ☐ IR ☒ ICE/H_2O Slurry ☐
COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐

7. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
8. Could all bottle labels and/or tags be reconciled with the COC? Yes ☒ No ☐
9. Were samples at the correct pH? (record below/on back) Yes ☐ No ☐ NA ☒
10. Were correct bottles used for the tests indicated? Yes ☒ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☒
12. Sufficient quantity received to perform indicated analyses? Yes ☒ No ☐

Contacted PM Date: by: via Voice Mail ☐ Verbal ☐ Other ☐
Concerning:

1. CHAIN OF CUSTODY

The following discrepancies occurred:

2. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.

3. SAMPLE PRESERVATION

Sample(s) were further preserved in sample receiving to meet recommended pH level(s). *Nitric Acid Lot # 101104HNO3; Sulfuric Acid Lot # 102804-H2SO4; Sodium Hydroxide Lot # -082404-NaOH; Hydrochloric Acid Lot # 100902-HCl; Sodium Hydroxide and Zinc Acetate Lot # 071604-CH3COO2ZN/NaOH*
Sample(s) were received with bubble > 6 mm in diameter (cc: PM)

4. Other (see below or back)

Client ID	pH	Date	Initials

Wastewater Analytical Results for Baker Tank #PARSNZ0433701

Parsons

Client Sample ID: IDW29

GC/MS Volatiles

Lot-Sample #...: G5B040373-001 **Work Order #...:** G3VK31AA **Matrix.....:** WW
Date Sampled...: 02/03/05 **Date Received..:** 02/04/05
Prep Date.....: 02/09/05 **Analysis Date..:** 02/09/05
Prep Batch #...: 5042393
Dilution Factor: 1 **Method.....:** SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	1.0	ug/L	0.13
Carbon tetrachloride	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.34
Chloroform	**0.46 J**	**1.0**	**ug/L**	**0.12**
1,1-Dichloroethane	ND	1.0	ug/L	0.10
1,2-Dichloroethane	ND	1.0	ug/L	0.22
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.10
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.11
1,1-Dichloroethene	ND	1.0	ug/L	0.36
1,2-Dichloropropane	ND	1.0	ug/L	0.15
Ethylbenzene	**1.1**	**1.0**	**ug/L**	**0.27**
Methylene chloride	ND	2.0	ug/L	0.35
Naphthalene	**1.6**	**1.0**	**ug/L**	**0.15**
Tetrachloroethene	ND	1.0	ug/L	0.38
Toluene	ND	1.0	ug/L	0.25
1,1,1-Trichloroethane	ND	1.0	ug/L	0.41
1,1,2-Trichloroethane	ND	1.0	ug/L	0.31
Trichloroethene	**4.0**	**1.0**	**ug/L**	**0.31**
Vinyl chloride	ND	1.0	ug/L	0.12
m-Xylene & p-Xylene	**1.0**	**1.0**	**ug/L**	**0.18**
o-Xylene	**1.0**	**1.0**	**ug/L**	**0.10**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(70 - 130)
1,2-Dichloroethane-d4	92	(70 - 130)
Toluene-d8	106	(70 - 130)
Dibromofluoromethane	96	(70 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

G5B040373

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WW	SW846 8260B		5042393	

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: G5B040373 **Work Order #...:** G4APD1AA **Matrix.....:** WATER
MB Lot-Sample #: G5B110000-393

Prep Date.....: 02/09/05
Analysis Date..: 02/09/05 **Prep Batch #...:** 5042393
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	2.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	98	(70 - 130)
1,2-Dichloroethane-d4	93	(70 - 130)
Toluene-d8	104	(70 - 130)
Dibromofluoromethane	89	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5B040373 **Work Order #...:** G4APD1AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5B110000-393 G4APD1AD-LCSD
Prep Date.....: 02/09/05 **Analysis Date..:** 02/09/05
Prep Batch #...: 5042393
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Chlorobenzene	**20.0**	**19.9**	**ug/L**	**99**		**SW846 8260B**
	20.0	**18.6**	**ug/L**	**93**	**6.6**	**SW846 8260B**
Benzene	**20.0**	**22.7**	**ug/L**	**113**		**SW846 8260B**
	20.0	**21.0**	**ug/L**	**105**	**7.6**	**SW846 8260B**
1,1-Dichloroethene	**20.0**	**20.2**	**ug/L**	**101**		**SW846 8260B**
	20.0	**18.3**	**ug/L**	**92**	**9.8**	**SW846 8260B**
Toluene	**20.0**	**20.8**	**ug/L**	**104**		**SW846 8260B**
	20.0	**19.3**	**ug/L**	**97**	**7.6**	**SW846 8260B**
Trichloroethene	**20.0**	**19.2**	**ug/L**	**96**		**SW846 8260B**
	20.0	**18.3**	**ug/L**	**92**	**4.5**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(70 - 130)
	100	(70 - 130)
1,2-Dichloroethane-d4	99	(70 - 130)
	98	(70 - 130)
Toluene-d8	102	(70 - 130)
	106	(70 - 130)
Dibromofluoromethane	96	(70 - 130)
	85	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5B040373 Work Order #...: G4APD1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: G5B110000-393 G4APD1AD-LCSD
Prep Date.....: 02/09/05 Analysis Date..: 02/09/05
Prep Batch #...: 5042393
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Chlorobenzene	**99**	**(80 - 120)**			**SW846 8260B**
	93	**(80 - 120)**	**6.6**	**(0-30)**	**SW846 8260B**
Benzene	**113**	**(80 - 120)**			**SW846 8260B**
	105	**(80 - 120)**	**7.6**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**101**	**(80 - 120)**			**SW846 8260B**
	92	**(80 - 120)**	**9.8**	**(0-30)**	**SW846 8260B**
Toluene	**104**	**(80 - 120)**			**SW846 8260B**
	97	**(80 - 120)**	**7.6**	**(0-30)**	**SW846 8260B**
Trichloroethene	**96**	**(80 - 120)**			**SW846 8260B**
	92	**(80 - 120)**	**4.5**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(70 - 130)
	100	(70 - 130)
1,2-Dichloroethane-d4	99	(70 - 130)
	98	(70 - 130)
Toluene-d8	102	(70 - 130)
	106	(70 - 130)
Dibromofluoromethane	96	(70 - 130)
	85	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Waste Material Profile, Hazardous Waste Manifest

WASTE MATERIAL PROFILE SHEET

Clean Harbors Profile No. CH91899B

A. GENERAL INFORMATION

GENERATOR EPA ID # *UT3213820894*
GENERATOR CODE (Assigned by Clean Harbors) *TO0469*
ADDRESS *Tooele Army Depot*

GENERATOR PROFILE No. **CH91899B**
GENERATOR NAME *Tooele Army Depot*
CITY *Tooele* STATE *UT* ZIP *84074*
PHONE:

CUSTOMER CODE (Assigned by Clean Harbors) *PAR1392*
ADDRESS *406 W South Jordan Parkway Suite 300*

CUSTOMER NAME: *Parsons Engineering Science In*
CITY *South Jordan* STATE *UT* ZIP *84095*

B. WASTE DESCRIPTION

WASTE DESCRIPTION: *PURGE AND DECON WATER*

PROCESS GENERATING WASTE (Please provide detailed description of process generating waste):
DRILLING AND PURGEING WELLS

C. PHYSICAL PROPERTIES (at 25C or 77F)

PHYSICAL STATE
- SOLID WITHOUT FREE LIQUID
- POWDER
- MONOLITHIC SOLID
- ☑ LIQUID WITH NO SOLIDS
- LIQUID/SOLID MIXTURE
  - % FREE LIQUID
  - % SETTLED SOLID
  - % TOTAL SUSPENDED SOLI
- SLUDGE
- GAS/AEROSOL

NUMBER OF PHASES/LAYERS
☑ 1 2 3
% BY VOLUME (Approx.)
TOP
MIDDLE
BOTTOM

VISCOSITY (If liquid present)
☑ 1 - 100 (e.g. WATER)
101 - 500 (e.g. MOTOR OIL)
501 - 10,000 (e.g. MOLASSES)
> 10,000

COLOR
CLEAR

ODOR
☑ NONE
MILD
STRONG
Describe:

BOILING POINT
<= 95 °F
> 95 °F
101 - 129 °F
☑ >= 130 °F

MELTING POINT
< 140 °F
140-200 °F
> 200 °F

TOTAL ORGANIC CARBON
☑ <= 1%
1-9%
>= 10%

FLASH POINT
< 73 °F
73 - 100 °F
101 -140 °F
141 -200 °F
☑ > 200 °F
Actual:

pH
<= 2
2.1 - 6.9
☑ 7 (Neutral)
7.1 - 12.4
>= 12.5
Actual:

SPECIFIC GRAVITY
< 0.8 (e.g. Gasoline)
0.8-1.0 (e.g. Ethanol)
☑ 1.0 (e.g. Water)
1.0-1.2 (e.g. Antifreeze)
> 1.2 (e.g. Methylene Chloride)

ASH
< 0.1
0.1 - 1.0
1.1 - 5.0
5.1 - 20.0
> 20
Unknown
Actual:

BTU/LB
☑ < 2,000
2,000-5,000
5,000-10,000
> 10,000
Actual

VAPOR PRESSURE (for liquids only) : mm Hg

D. COMPOSITION (List the complete composition of the waste, include any inert components and /or debris. Ranges for individual components are acceptable. If a trade name is used, please supply an MSDS. Please do not use abbreviations.)

CHEMICAL	MIN - MAX	UOM
BENZENE	0.000 – 139.000	PPB
CARBON TETRACHLORIDE	0.000 – 56.000	PPB
CHLOROFORM	0.000 – 45.000	PPB
ETHYLBENZENE	0.000 – 56.000	PPB
NAPHTHALENE	0.000 – 58.000	PPB
TETRACHLOROETHANE	0.000 – 55.000	PPB
TOLUENE	0.000 – 79.000	PPB
TRICHLOROETHENE	0.000 – 53.000	PPB
WATER	99.000 – 100.000	%
Xylene (Mixed Isomers	0.000 – 319.000	PPB

CHEMICAL	MIN - MAX	UOM
— NO CODE		

ANY METAL OBJECTS PRESENT? YES ☑ NO
If yes include dimension

Clean Harbors Profile No. CH91899B

E. CONSTITUENTS -- Are these values based on testing or knowledge? ☐ Knowledge ☑ Testing

If constituent concentrations are base on analytical testing, analysis must be provided. If based on knowledge, basis of knowledge must be provided below.

RCRA	REGULATED METALS	REGULATORY LEVEL (mg/l)	TCLP mg/l	TOTAL ppm
D004	ARSENIC	5.0		
D005	BARIUM	100.0		
D006	CADMIUM	1.0		
D007	CHROMIUM	5.0		
D008	LEAD	5.0		
D009	MERCURY	0.2		
D010	SELENIUM	1.0		
D011	SILVER	5.0		

RCRA	VOLATILE COMPOUND	REGULATORY LEVEL (mg/l)	TCLP mg/l	TOTAL ppm
D018	BENZENE	0.5		
D019	CARBON TETRACHLORIDE	0.5		
D021	CHLOROBENZENE	100.0		
D022	CHLOROFORM	6.0		
D028	1,2-DICHLOROETHANE	0.5		
D029	1,1-DICHLOROETHYLENE	0.7		
D035	METHYL ETHYL KETONE	200.0		
D039	TETRACHLOROETHYLENE	0.7		
D040	TRICHLOROETHYLENE	0.5		
D043	VINYL CHLORIDE	0.2		

RCRA	SEMI-VOLATILE COMPOUND	REGULATORY LEVEL (mg/l)	TCLP mg/l	TOTAL ppm
D023	o-CRESOL	200.0		
D024	m-CRESOL	200.0		
D025	p-CRESOL	200.0		
D026	CRESOL (TOTAL)	200.0		
D027	1,4-DICHLOROBENZENE	7.5		
D030	2,4-DINITROTOLUENE	0.13		
D032	HEXACHLOROBENZENE	0.13		
D033	HEXACHLOROBUTADIENE	0.5		
D034	HEXACHLOROETHANE	3.0		
D036	NITROBENZENE	2.0		
D037	PENTACHLOROPHENOL	100.0		
D038	PYRIDINE	5.0		
D041	2,4,5-TRICHLOROPHENOL	400.0		
D042	2,4,6-TRICHLOROPHENOL	2.0		

RCRA	PESTICIDES AND HERBICIDE	REGULATORY LEVEL (mg/l)	TCLP mg/l	TOTAL ppm
D012	ENDRIN	0.02		
D013	LINDANE	0.4		
D014	METHOXYCHLOR	10.0		
D015	TOXAPHENE	0.5		
D016	2,4-D	10.0		
D017	2,4,5-TP (SILVEX)	1.0		
D020	CHLORDANE	0.03		
D031	HEPTACHLOR (AND ITS EPOXIDE)	0.008		

OTHER METALS	MIN	MAX	UOM
ALUMINUM			
ANTIMONY			
BERYLLIUM			
CALCIUM			
COPPER			
MAGNESIUM			
MOLYBDENUM			
NICKEL			
POTASSIUM			
SILICON			
SODIUM			
THALLIUM			
TIN			
VANADIUM			
ZINC			

NON-METALS	MIN	MAX	UOM
BROMINE			
CHLORINE			
FLUORINE			
IODINE			
SULFUR			

OTHER NON-METALS	MIN	MAX	UOM
AMMONIA			
REACTIVE SULFIDE			
CYANIDE TOTAL			
CYANIDE AMENABLE			
CYANIDE REACTIVE			

OTHER CHEMICALS	MIN	MAX	UOM
PHENOL			
Total Petroleum Hydrocarbons			

OTHER

HOCs

☐ NONE
☑ < 1000 PPM
☐ >= 1000 PPM

PCBs

☑ NONE
☐ <50 PPM
☐ >= 50 PPM

IF PCBS ARE PRESENT, IS THE WASTE REGULATED BY TSCA 40 CFR 761?

YES ☑ NO

ADDITIONAL HAZARDS

DOES THIS WASTE HAVE ANY UNDISCLOSED HAZARDS OR PRIOR INCIDENTS ASSOCIATED WITH IT, WHICH COULD AFFECT THE WAY IT SHOULD BE HANDLED?

YES ☑ NO (If yes, explain)

ASBESTOS	INFECTIOUS, PATHOGENIC, OR ETIOLOGICAL AGENT	REDUCING AGENT
DEA REGULATED SUBSTANCES	OXIDIZER	SHOCK SENSITIVE
DIOXIN	OSHA REGULATED CARCINOGENS	SPONTANEOUSLY IGNITES WITH AIR
EXPLOSIVE	PESTICIDE	THERMALLY SENSITIVE
HERBICIDE	POLYMERIZABLE	WATER REACTIVE
FUMING / SMOKING WASTE	RADIOACTIVE	
NONE OF THE ABOVE		

Clean Harbors Profile No. CH91899B

F. REGULATORY STATUS

☑ YES NO USEPA HAZARDOUS WASTE?
F001 F002 F003 F005

YES ☑ NO DO ANY STATE WASTE CODES APPLY?

YES ☑ NO IS THIS WASTE PROHIBITED FROM LAND DISPOSAL WITHOUT FURTHER TREATMENT PER 40 CFR PART 268?
LDR CATEGORY:
VARIANCE INFO:

☑ YES NO IS THIS A WASTEWATER PER 40 CFR PART 268.2?

YES ☑ NO IF ANY WASTE CODES D001, D002, D003 (OTHER THAN REACTIVE CYANIDE OR REACTIVE SULFIDE), D004-D011, D012-D017 NON-WASTEWATERS, OR D018-D043 APPLY, ARE ANY UNDERLYING HAZARDOUS (UHCs) PRESENT ABOVE UNIVERSAL TREATMENT

YES ☑ NO DOES TREATMENT OF THIS WASTE GENERATE A F006 OR F019 SLUDGE?

YES ☑ NO IS THIS WASTE SUBJECT TO CATEGORICAL PRETREATMENT DISCHARGE STANDARDS?
IF YES, SPECIFY POINT SOURCE CATEGORY LISTED IN 40 CFR PART 4

YES ☑ NO IS THIS WASTE REGULATED UNDER THE BENZENE NESHAP RULES? (IS THIS WASTE FROM A CHEMICAL MANUFACTURING, COKE BY-PRODUCT RECOVERY, OR PETROLEUM REFINERY PROCESS?)

YES ☑ NO DOES THIS WASTE CONTAIN VOC'S IN CONCENTRATIONS >=500 PPM?

YES ☑ NO DOES THE WASTE CONTAIN GREATER THAN 20% OF ORGANIC CONSTITUENTS WITH A VAPOR PRESSURE >= .3KPA (.044 PSIA)?

☑ YES NO DOES THIS WASTE CONTAIN AN ORGANIC CONSTITUENT WHICH IN ITS PURE FORM HAS A VAPOR PRESSURE GREATER THAN 77 KPa (11.2PSIA)?

YES ☑ NO IS THIS CERCLA REGULATED (SUPERFUND) WASTE ?

G. D.O.T INFORMATION: (Include proper shipping name, hazard class and ID number).
US D.O.T. DESCRIPTION: *Hazardous waste, liquid, n.o.s., (TRICHLOROETHENE, TETRACHLOROETHENE) , 9, NA3082, PG III*

H. TRANSPORTATION REQUIREMENTS
ESTIMATED SHIPMENT FREQUENCY: ONE TIME WEEKLY MONTHLY QUARTERLY YEARLY ☑ OTHER *VARIES*
IF BULK LIQUID OR BULK SOLID PLEASE INICATE THE EXPECTED NUMBER OF LOADS PER SHIPPING FREQUENCY

CONTAINERIZED	☑ BULK LIQUID	BULK SOLID
CONTAINERS/SHIPMENT	GALLONS/SHIPMENT: GAL.	SHIPMENT UOM: TON YARD
STORAGE CAPACITY:	FROM TANKS: TANK SIZE GAL.	PER SHIPMENT: 0.00 MIN 0.00MAX
CONTAINER TYPE:	FROM DRUMS	STORAGE CAPACI TON/YD
CUBIC YARD BOX	VEHICLE TYPE:	VEHICLE TYPE:
PALLET	VAC TRUCK	DUMP TRAILER
TOTE TANK	☑ TANK TRUCK	ROLL OFF BOX
OTHER:	RAILROAD TANK CAR	INTERMODAL ROLLOFF BOX
DRUM SIZE:	CHECK COMPATIBLE STORAGE MATERIAL	CUSCO/VACTOR
CONTAINER MATERIAL:	☑ STEEL / STAINLESS STEEL	OTHER
STEEL	RUBBER LINED / FIBERGLASS LINED	
FIBER	DERAKANE	
PLASTIC	OTHER	
OTHER		

I. SPECIAL REQUEST
SPECIFIC DISPOSAL RESTRICTIONS OR REQUESTS: *LANDFILL GRASSY MOUNTAIN / MEETS TREATMENT STANDARDS*
SPECIAL WASTE HANDLING REQUIREMENTS
OTHER COMMENTS OR REQUESTS:

J. BIENNIAL / ANNUAL REPORTING INFORMATION
SIC CODE *9711* SOURCE CODE *A63* FORM CODE *B101* ORIGIN CODE *NA*

K. SAMPLE STATUS

	YES	SAMPLED BY	DATE SAMPLED	WHERE SENT
REPRESENTATIVE SAMPLE HAS BEEN SUPPLIE	☑ NO			

GENERATORS CERTIFICATION

I here by certify that all information submitted in this and attached documents is correct to the best of my knowledge. I also certify that any samples submitted are representative of the actual waste. If Clean Harbors discovers a discrepancy during the approval process, Generator grants Clean Harbors the authority to amend the profile, as Clean Harbors deems necessary, to reflect the discrepancy.

AUTHORIZED SIGNATURE	NAME (PRINT)	TITLE	DATE
Merle D Reynolds	Merle D Reynolds	Env Prof Spec	3/9/05

FOR CLEAN HARBORS USE ONLY
CHI REPRESENTATIVE COMPLETING PROFILE:_____

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)
Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. UT3213820894 — Manifest Document No. 15004

3. Generator's Name and Mailing Address
Tooele Army Depot Environmental Office, SMTE-CS-EO
Building 6, Attn: Dean Reynolds, Tooele, UT 84074

4. Generator's Phone (435) 833-3504

5. Transporter 1 Company Name: MP Environmental — 6. US EPA ID Number: CAT000624247

7. Transporter 2 Company Name — 8. US EPA ID Number

9. Designated Facility Name and Site Address
Tooele Army Depot Environmental Office, SMTE-CS-EO
Utah Industrial Depot, Jade St. and B Ave, Tooele, UT 84074
10. US EPA ID Number: UT2213820894

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Hazardous Waste Liquid, n.o.s. (TCE), 9, NA3082, PG III	001	TT	12000	est. P
b.				
c.				
d.				

15. Special Handling Instructions and Additional Information
Emergency Contact - Tooele Army Depot Fire Department (435)833-2015

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Larry McFarland	Larry McFarland	03	23	05

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Leroy Parker				

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete. Lab Safety Supply, Inc

FILE COPY OR STATE COPY

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)
Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. UT3213820894 — Manifest Document No. 5005

2. Page 1 of 1

3. Generator's Name and Mailing Address
Tooele Army Depot Environmental Office, SMATE-CS-EO
Building 8, Attn: Dean Reynolds, Tooele, UT 84074

4. Generator's Phone (435) 833-3504

5. Transporter 1 Company Name — 6. US EPA ID Number
HP Environmental — CA T0000621417

7. Transporter 2 Company Name — 8. US EPA ID Number

9. Designated Facility Name and Site Address — 10. US EPA ID Number
Tooele Army Depot Environmental Office, SMATE-CS-EO
Utah Industrial Depot, Jade St. and 5 Ave., Tooele, UT 84074
UT3213820894

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Hazardous Waste Liquid, n.o.s. (TCE), 9 NA3082, PG III		TT	420	P est.
b.				
c.				
d.				

GENERATOR

15. Special Handling Instructions and Additional Information
Emergency Contact - Tooele Army Depot Fire Department (435)833-2015

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
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Printed/Typed Name	Signature	Month	Day	Year
LARRY MCFARLANE		4	3	05

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

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